Hisense

LCD Television

Service Manual

Chassis： MSD308PX

K15 Series

Ver 1.1

Hisense Electric Co.，Ltd.

September，2011

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Service Manual

1. Precautions and notices

BEFORE SERVICING THE LCD TV, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

WHEN REPLACEMENT PARTS ARE REQUIRED, BE SURE TO USE REPLACEMENT PARTS SPECIFIED BY THE MANUFACTURER.

Proper service and repair is important to the safe, reliable operation of all Hisense Electric Co., Ltd Equipment. The service procedures recommended by Hisense and described in this Service Guide are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Hisense could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Hisense has not undertaken any

such broad evaluation. Accordingly, a serviceman that uses a service procedure or tools, which are not recommended by Hisense, must first satisfy himself thoroughly that neither his safety nor the safe of the equipment will be jeopardized by the service method selected.

Hereafter throughout this manual, Hisense Electric Co., Ltd will be referred to as Hisense.

1.1 Warning

1.1.1

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list. Use of substitute replacement parts, which do not have the same specified safety characteristics, may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Hisense. Hisense assumes no liability, express or implied, arising out of any unauthorized modification of design. Serviceman assumes all liability.

DANGER CAUTION

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE GUIDE.

1.1.2.

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD).

Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

1. Never replace modules or other components while the unit is switched on.

2. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

1.1.3

To prevent electrical shock, do not use this polarized ac plug with an extension cord, receptacle, or the outlet unless the blades can be fully inserted to prevent blade exposure. To prevent electrical shock, match wide blade or plug to wide slot, fully insert.

1.1.4

When replacement parts are required, be sure to use replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

1.1.5

Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.

-Note: The wire trees should be routed correctly and fixed with the mounted cable clamps.

-The insulation of the mains lead should be checked for external damage.

1.1.6

(1) Do not touch Signal and Power Connector while this product operates. Do not touch EMI ground part and Heat Sink of Film Filter.

(2) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.

(3) Do not use this product in locations where the humidity is extremely high, where it may be splashed with water, or where flammable materials surround it. Do not install or use the product in a location that does no satisfy the specified environmental conditions. This may damage the product and may cause a fire.

(4) If a foreign substance (such as water, metal, or liquid) gets inside the panel module, immediately turn off the power. Continuing to use the product may cause fire or electric shock.

(5) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power. Continuing to use the product, it may cause fire or electric shock.

(6) Do not disconnect or connect the connector while power to the product is on. It takes some time for the voltage to drop to a sufficiently low level after the power has been turned off. Confirm that the voltage has dropped to a safe level before disconnecting or connecting the connector.

(7) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.

(8) Do not damage or modify the power cable. It may cause fire or electric shock.

(9) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.

(10) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.

(11) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

1.2 Notes

Notes on Safe Handling of the LCD panel and during service

The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.

• Before starting the work, secure a sufficient working space.

• At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source of the TV during servicing.

• To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power board, start servicing at least 2 minutes after the main power has been turned off.

• While the main power is on, do not touch any parts or circuits other than the ones

specified. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.

• When installing the LCD module in, and removing it from the packing carton, be sure to have at least two persons perform the work.

• When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.

• When handling the circuit board, be sure to remove static electricity from your body before handling the circuit board.

• Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.

• Do not stack the circuit boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.

• Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are

fixed in position with the wire clamps so that the wires do not move, thereby ensuring that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.

• Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the set.

2. **Product Specifications:**

2.1 Specification:

LHDN32K15/16CEU：

Model	LHDN32 XX
Panel System	32 inches LED Backlight Panel
Display Resolution	1366×768 Pixels
Television System	PAL I B/G D/K,SECAM B/G D/K L/L' DVB-T DVB-C
Brightness	450cd
Contrast Ratio	5000:1
Inputs/Output	220-240V AC 50/60Hz 60W
SCART	1
HDMI	2
VGA	1
PC Audio	1
Y/Pb/Pr	1
USB	1
VIDEO IN (RCA)	1
AUDIO IN (RCA)	1 (L+R)
ANT	1
Coaxial Audio Output	1
PCMCIA	1
Speaker Power	8W+8W
HEADPHONE	1
Power Source	220-240V ~50/60Hz
Dimension(W×H×D) with base	772.3mm×560.2mm×220.6mm / 772.3mm×560.2mm×220.6mm
Dimension(W×H×D) without base	772.3mm×495mm×46.5mm / 772.3mm×510.6mm×46.5mm
Weight with base(Kg)	9.2Kg
Weight without base(Kg)	8.7Kg

Note:Features and specifications are subject to changes without notice.

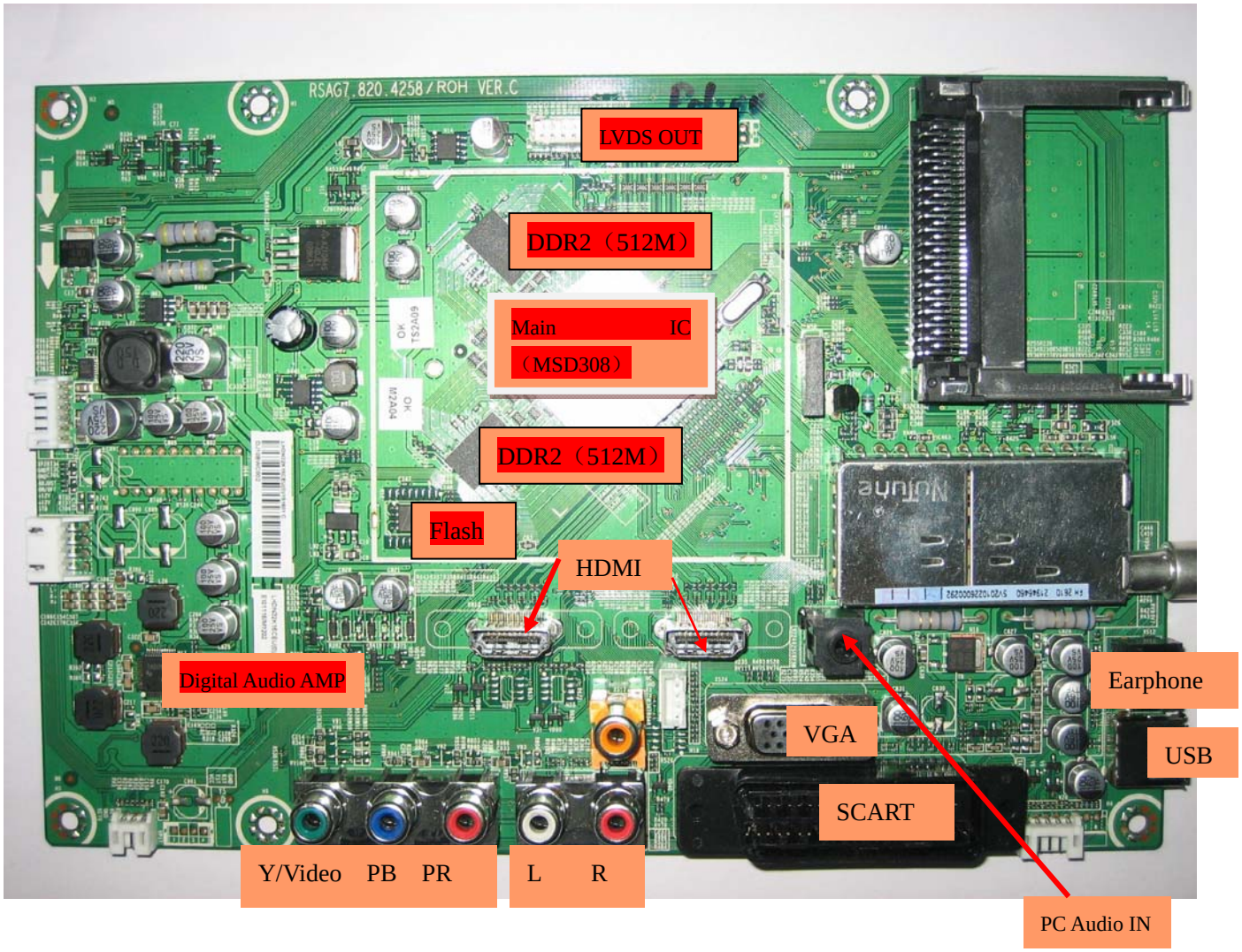
LTDN24K15CEU：

Model	LTDN24 XX
Panel System	24 Inches LED Backlight Panel
Display Resolution	1920x1080 Pixels
Television System	PAL I B/G D/K,SECAM B/G D/K L/L' DVB-T DVB-C
Brightness	300cd/m²
Contrast Ratio	1000:1
Inputs/Output	100-240V AC 50/60Hz 33W
SCART	1
HDMI	2
VGA	1
PC Audio	1
Y/Pb/Pr	1
USB	1
VIDEO IN (RCA)	1
AUDIO IN (RCA)	1 (L+R)
ANT	1
Coaxial Audio Output	1
PCMCIA	1
Speaker Power	2W+2W
HEADPHONE	1
Dimension(W×H×D) with base (mm)	564x426x180
Dimension(W×H×D) without base(mm)	564x370x44
Weight with base(Kg)	4.4
Weight without base(Kg)	4.6

Note:Features and specifications are subject to changes without notice.

2.2 Main Board:

K15 Series

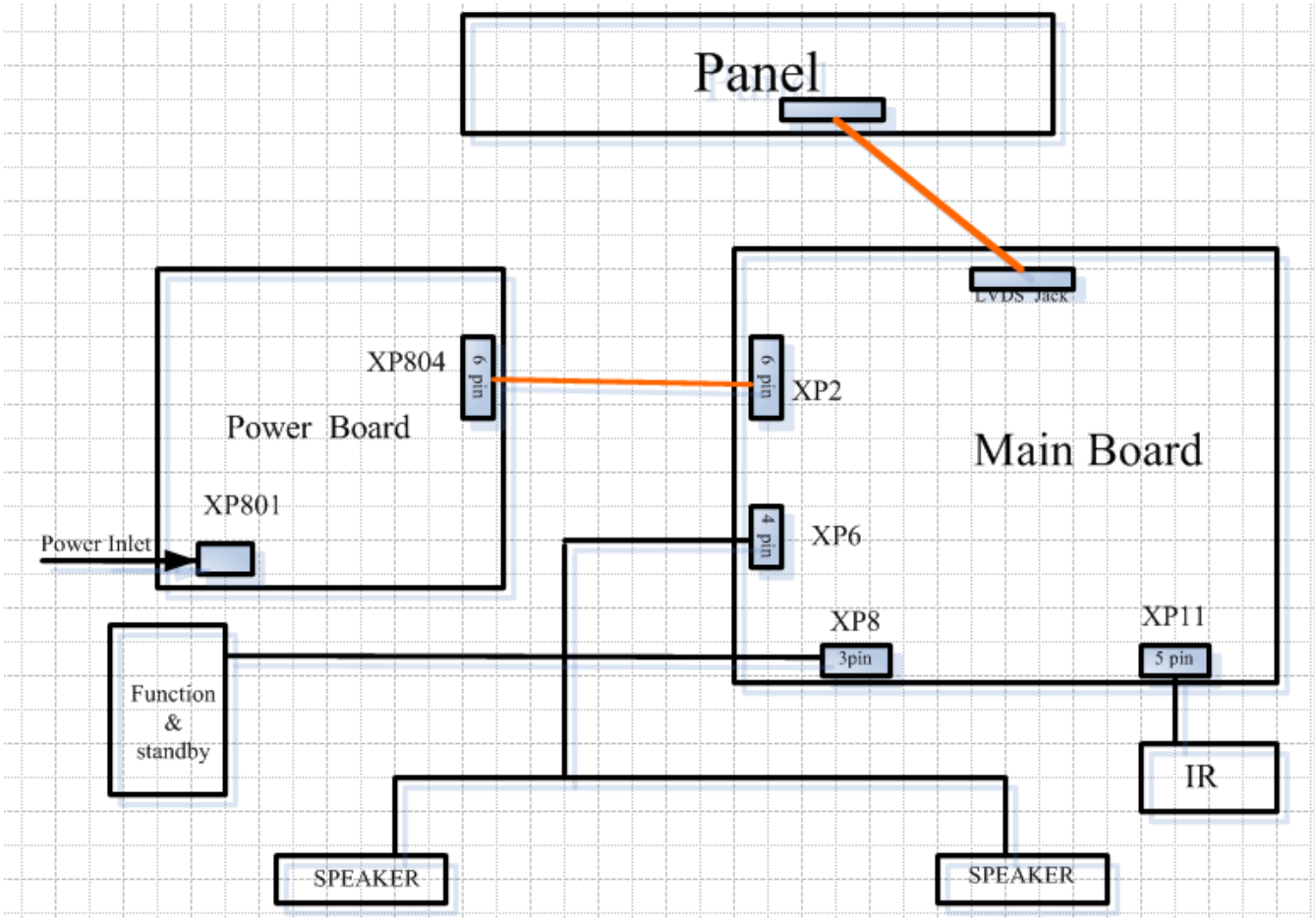


Note：

The above "Main board image" is only take LHDN32K15CEU for example, others please refer to the actual units to determine the boards.

2.3 Wiring Diagram:

LHDN 32K15CEU”



Model	Panel Mode	LVDS(Main-Panel)
LTDN24K15CEU	M236H3-LA2\V236H1-LE2	HX2-2X20KLB400P-CMO\ROH
LHDN32K15/K16CEU	HE315DH-E02(S3)\ROH	HX2-2×15KLB400P-HS-1\ROH
LHDN32K15CEU(1)	HE315DH-E06\S3\ROH	Same to LHDN32K15

3. Factory/Service OSD Menu and Adjustment

3.1 To enter the Factory OSD Menu

a. With factory RC (remote control)

1. Press “M” button and enter factory mode.(Note1)
2. Press “Menu” button and enter factory OSD menu.
3. Press “CH+”/“CH-” button select the function menu, press “VOL+”/“VOL-” enter the selected function menu. Press “VOL+”/“VOL-” button adjust values in the menu.
4. Press “M” button exit factory mode in the factory OSD menu.

When TV outgoing factory, user can not enter factory OSD menu with Factory Remote

Note:

1. In the “Factory Menu”, item “Function”->”TOFAC” ,you can select “M” or “U”, default is “U”.

----M-Means you can enter factory mode with factory RC or user RC.

----U-Means you can enter factory mode only with user’s RC.

2. Mode “M” is only used for factory production.

b. With user’s RC

Power on the TV.

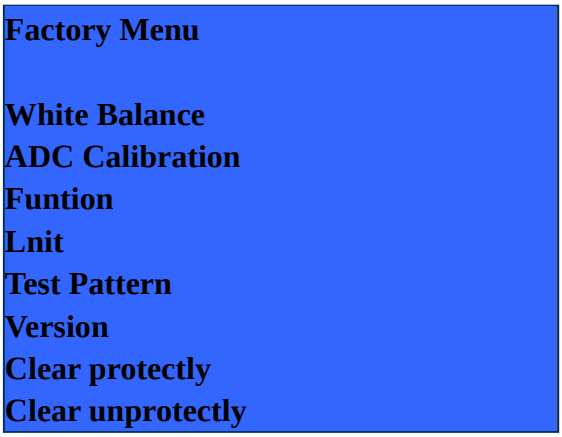
1. Press “Menu” button and call up User OSD Menu.
2. Select “ Sound” -> “Balance” item.
3. Press number key 1->9->6 ->9 in sequence when “Balance” item is focused.
   Note: If necessary, re-do number keys.
4. Factory OSD appears.

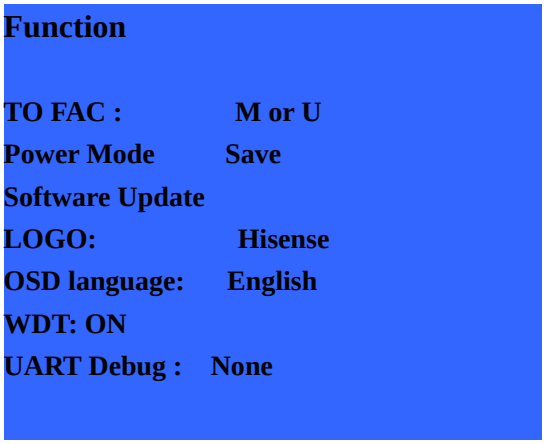
Note: Press the standby button then AC turn off and restart the TV, which can exit factory OSD menu.

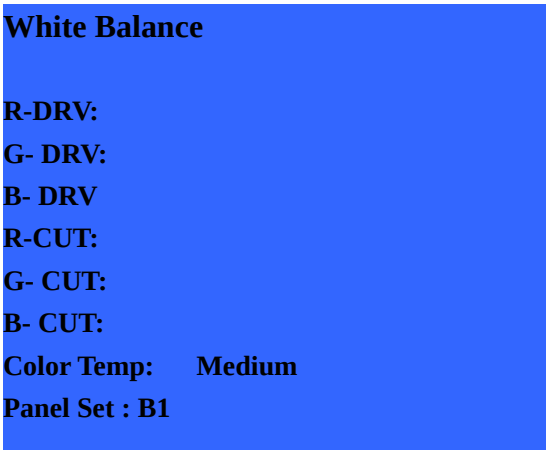
3.2 Factory OSD Menu

The Factory OSD Menu comprises Factory Menu and Design Menu .

3.2.1、Factory Menu







3.2.2、Design Menu

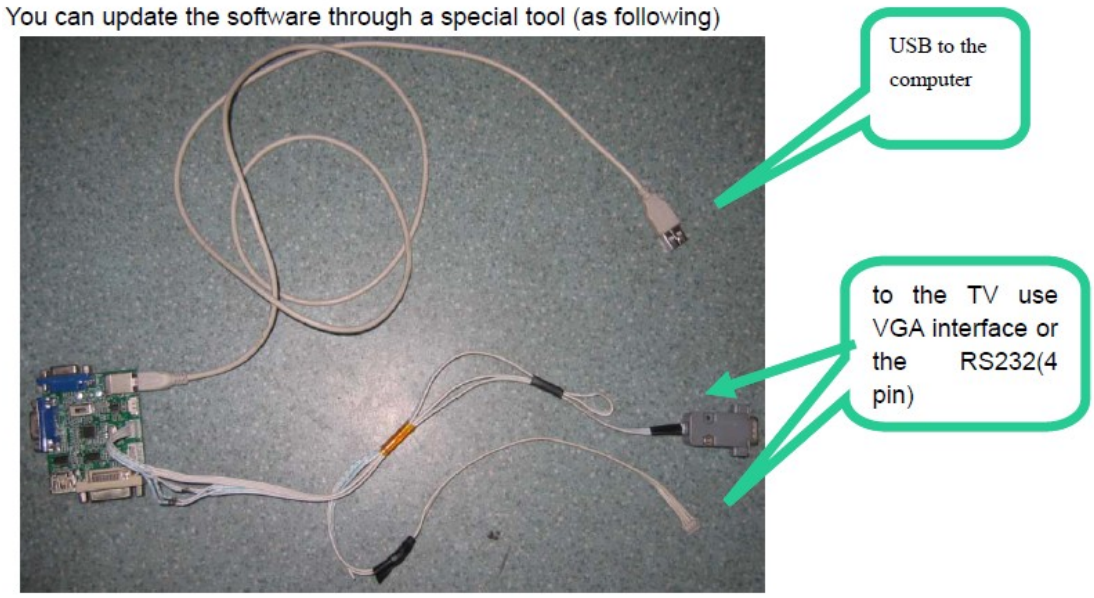
Note：

The above “Factory/Service OSD Menu” are reference only, please refer to the actual units to determine the appearances.

4. Software Upgrading

4.1 Upgrading with the ISP_TOOL

4.1.1 Hardware connecting
You can update the software through a special tool (as following)
Connect the Debug board to the TV use VGA interface or the RS232 (4 pin), the other USB port to the compute.


You can update the software through a special tool (as following)
USB to the computer
to the TV use VGA interface or the RS232(4 pin)

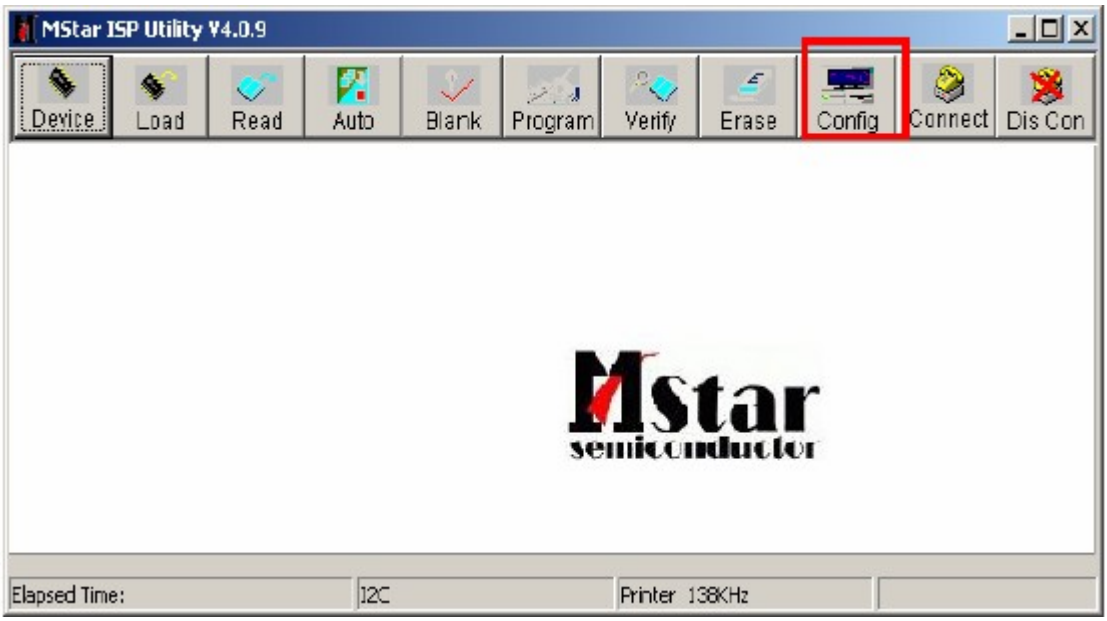
4.1.2 Install the ISP_TOOL4.5.0.4-------only for the first time update.

1、The software is upgraded by a burning tool- ISP_TOOL.exe

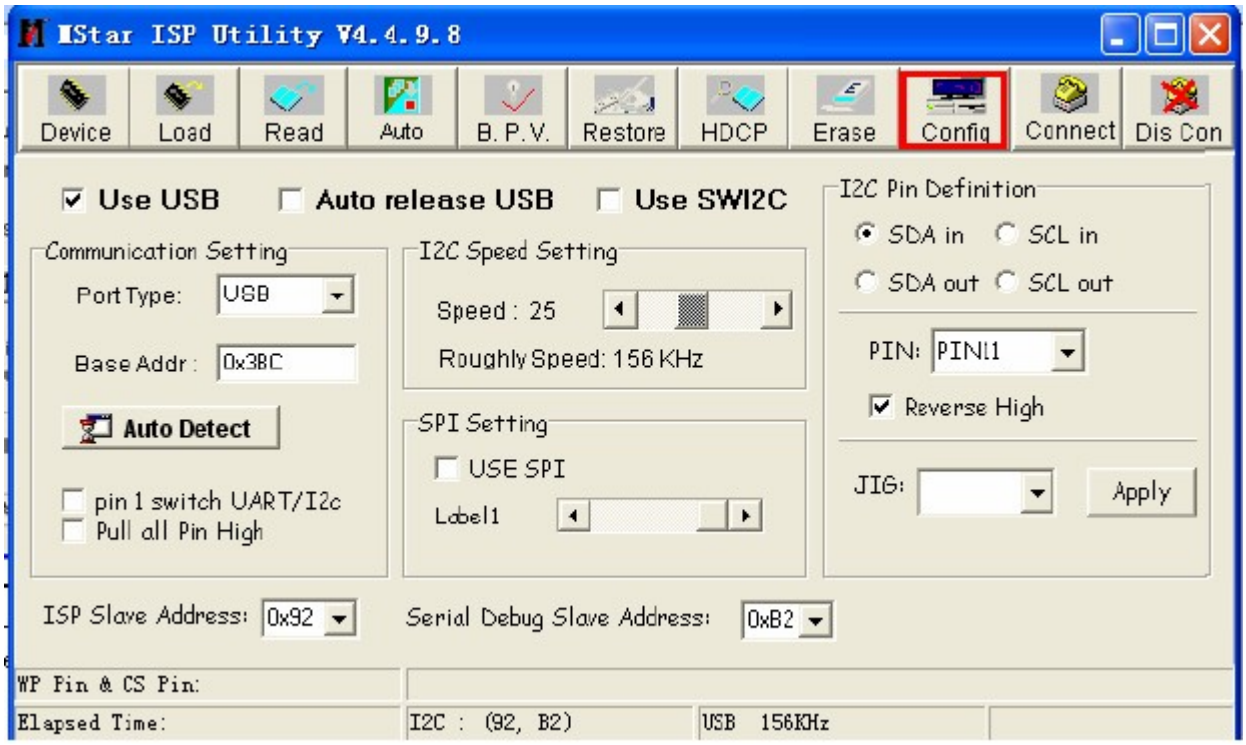
2、Find the folder where the ISP_TOOL4.5.0.4 lies in.

There are three folders/files in this folder together.
DLPORTIO.dll and FTD2XX.DLL must be in the same folder

3、Double click the ISP_TOOL4.5.0.4 icon, and then a dialog window will show as below.



4、Click the" **Config** "button. And then a dialog window will show as below.



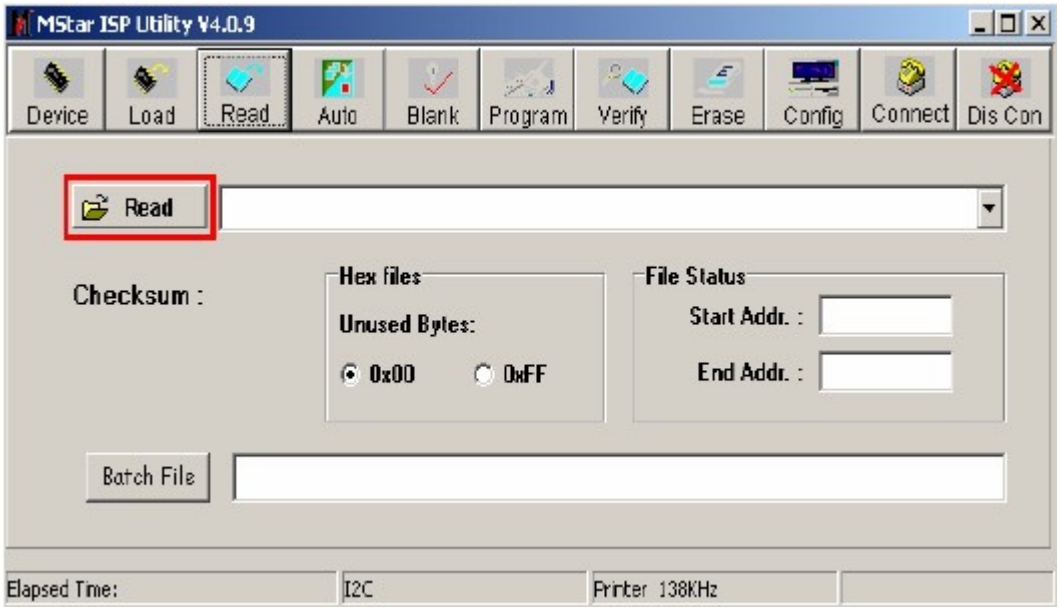
Draw on the front of "Use USB"
Port Type setting is USB
Base Addr setting is 0x38C
ISP Slave Address choose 0x92
Serial Debug Slave Address choose 0xB2，

5、Click the "Connect"button，if appear the following figure, It indicates that the ISP_TOOL has

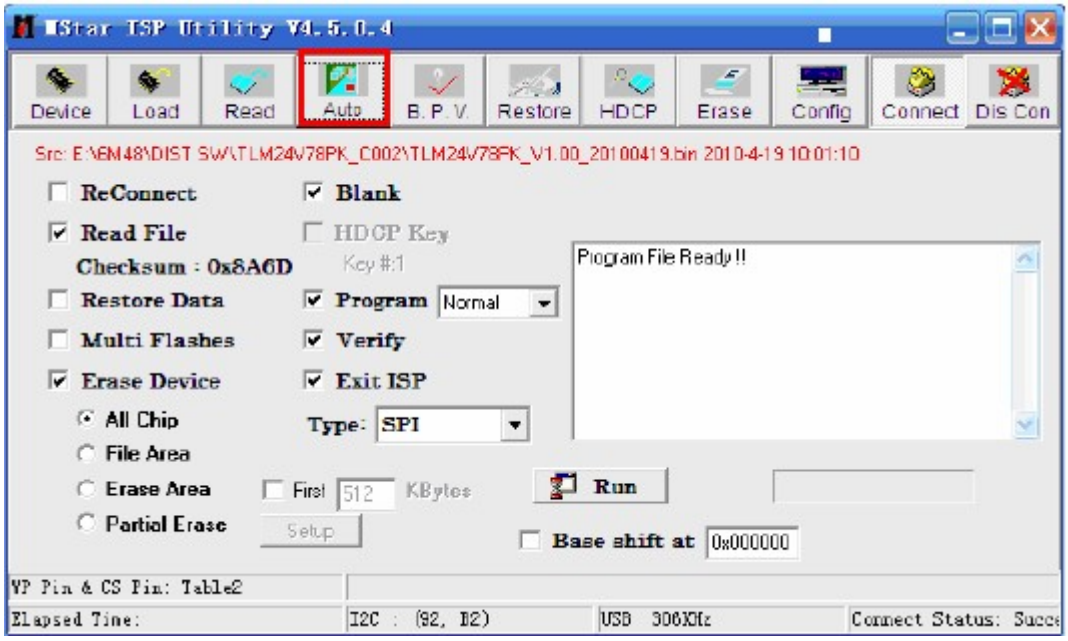
connected.(According to the tv set,"Device Type" maybe different.)

If appear the following figure，It indicates that the ISP_TOOL has not connected. Please click the"DisCon"button and "Connect"button to connect..

6、Click the"**Read** "button，**Choose the correct update file**。



7、After the update file has been chosen successfully。
Click the"**Auto**"button and choose parameters as following。



8、Click the “**Run”** button and wait update end**.**

If show any error message ，then do “**Dis Con**” >> “**Connect**”，and click the “**Run**” button again，till show the following dialog window。

4.2 Upgrading with the USB

Software can update with USB device:

1. Copy the “*.BIN” file such as “MERGE.BIN” to the root directory of a USB disk.
2. Insert the USB disk into the USB slot of the TV SET.
3. Press “Menu” button and call up User OSD Menu,choose "Channel"->”Software Update(USB)” item. (Note 1)
4. Press “OK”, it will show a confirm message box, Press [◂] button to select “yes” in the confirm message box, to start automatic update.
5. Then it will update the software automatically,Please don’t power off during the updating process.
6. After the software is successfully upgraded,TV SET will restart automatically.

Note:

1. In some TV SET, ”Software Update(USB)” item maybe in “OPTION” menu.
2.After updating, you must confirm the software version in the “Factory Menu” and you'd better do a " **UnProtected Clear**" in the “Factory Menu”.

5. Circuit instruction

5.1 Power assign and block diagram

Power assign:

The Power only has +12V_IN output ， other voltages are converted from +12V_IN.

a. 5Vstb is converted by N19 from +12V_IN，5VAIN and 5V_USB are converted by N43 from 5Vstb.

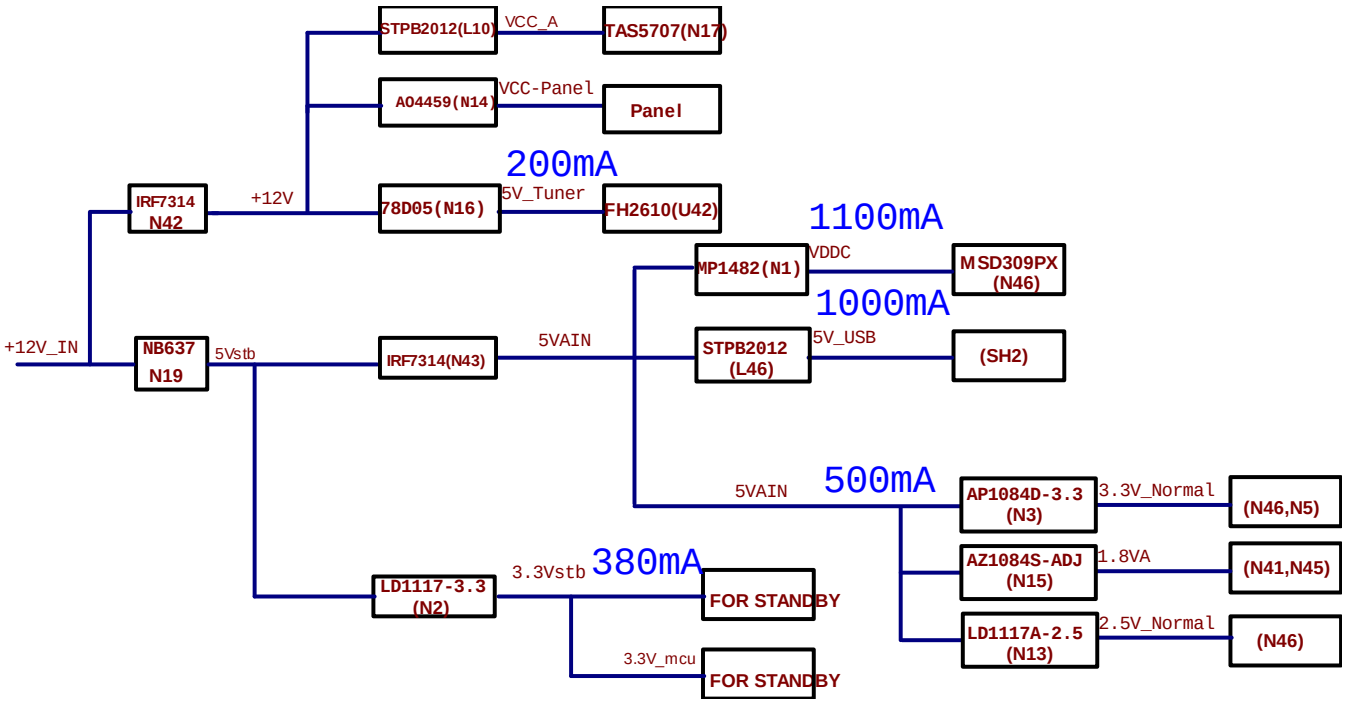
b. 3.3Vstb and 3.3V_mcu as standby power supply for standby mode.

c. 3.3V_Normal supply power for N5 and Main IC N46 is converted by N3 from 5VAIN; 2.5V_Normal supply power for N46 is converted by N13 from 5VAIN; VDDC(1.28V) supply power for main IC(core voltage) is converted by N1 from 5VAIN;1.8VA supply power for N41(DDR),N45(DDR) is converted by N15 from 5VAIN.

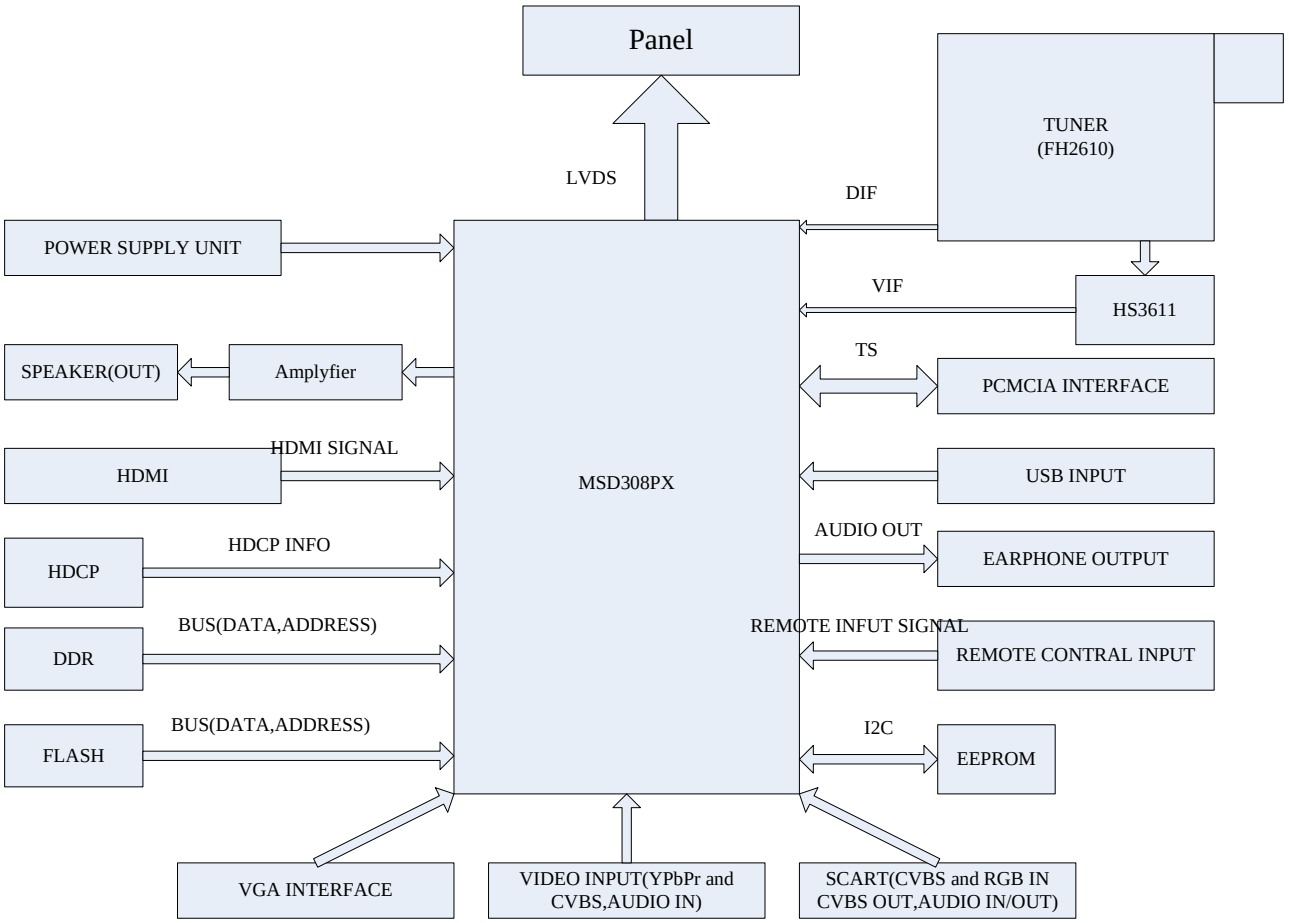
e VCC_A supply power for N17(audio amplifier) is converted by N42 from +12V_IN; 5V_Tuner supply power for Tuner is converted by N16 from +12V; 5V_USB supply power for USB interface.

f VCC-Panel supply power for Panel is converted by N14 from +12V_IN

Block diagram:



5.2 Image and signal process

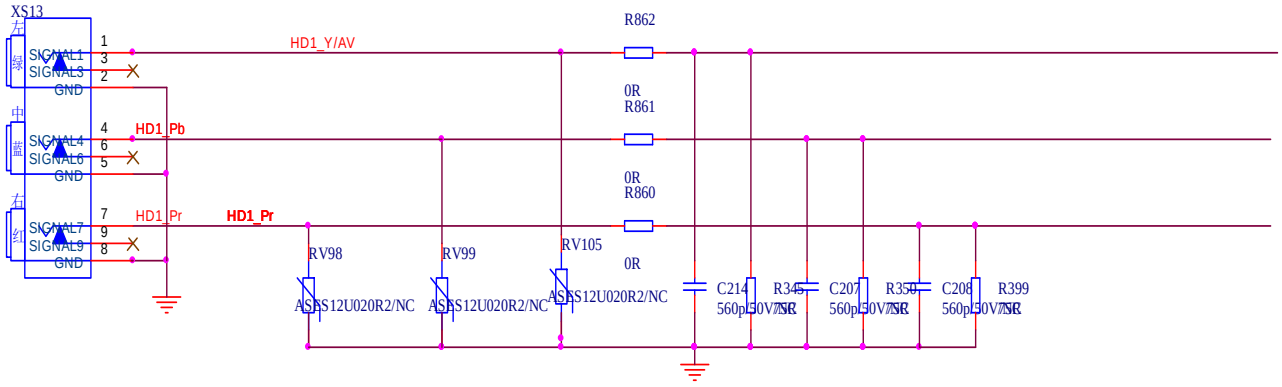


a) RF Signal

Digital intermediate frequency and simulation intermediate frequency are processed by Tuner (U42) from RF Signal. Transport Stream is demodulated directly by main IC from Digital intermediate frequency then enter PCMCIA card to decipher later return the main IC. The simulation intermediate signal that has passed amplification and surface acoustic wave filter to get intermediate frequency enters the main IC. After processed by main IC, next the video signal is processed by SCALER output LVDS signal.to panel . The audio signal is processed and the Audio amplified to the Speakers.

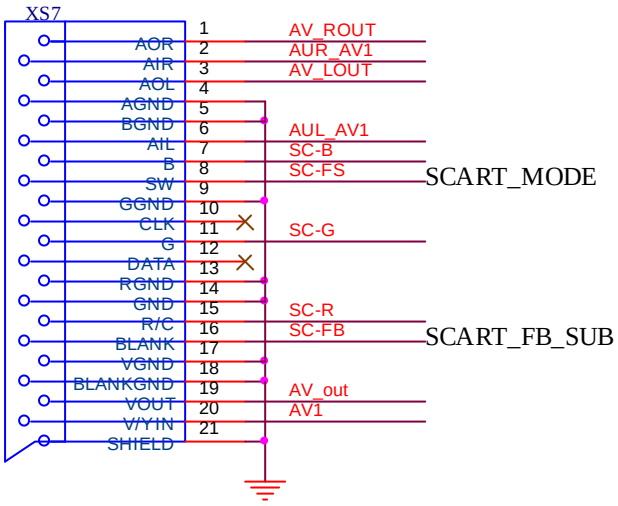
b). AV Signal

The video signal of AV and YPbPr share the same Terminal of XS13，then enter U46.

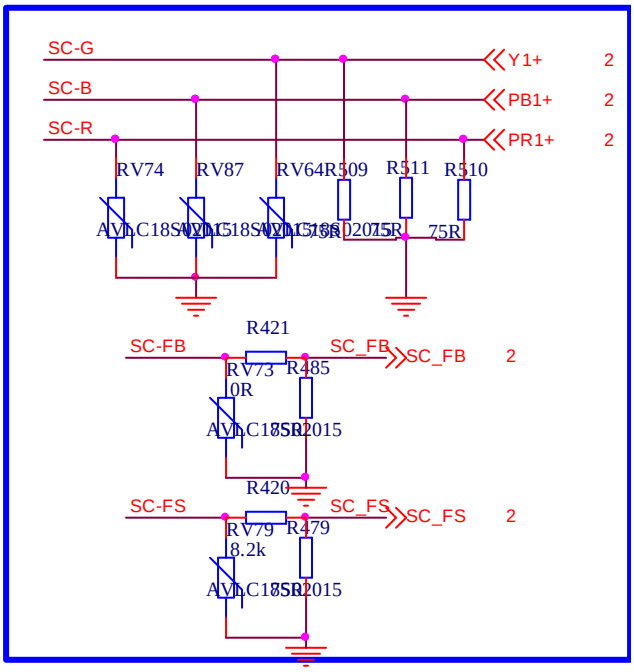


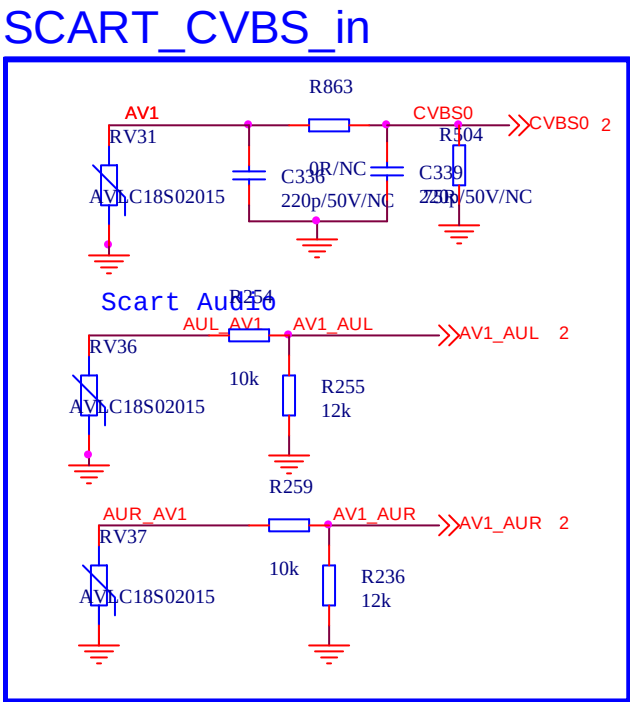
The CVBS video signal of SCART input the Terminal of XS7, then enter U46.

The RGB video signal of SCART input the Terminal of XS7, then enter U46



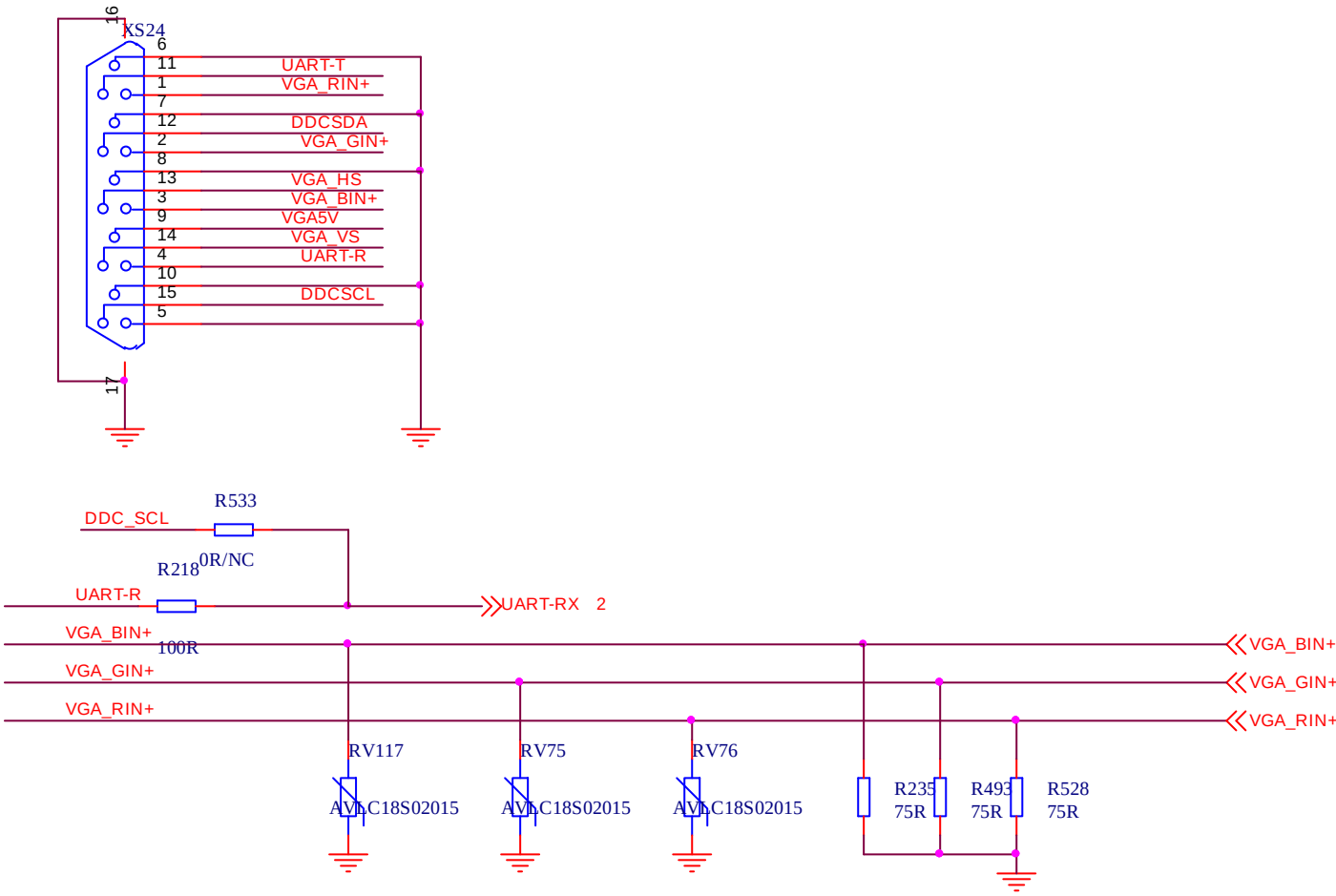
SCART_RGB





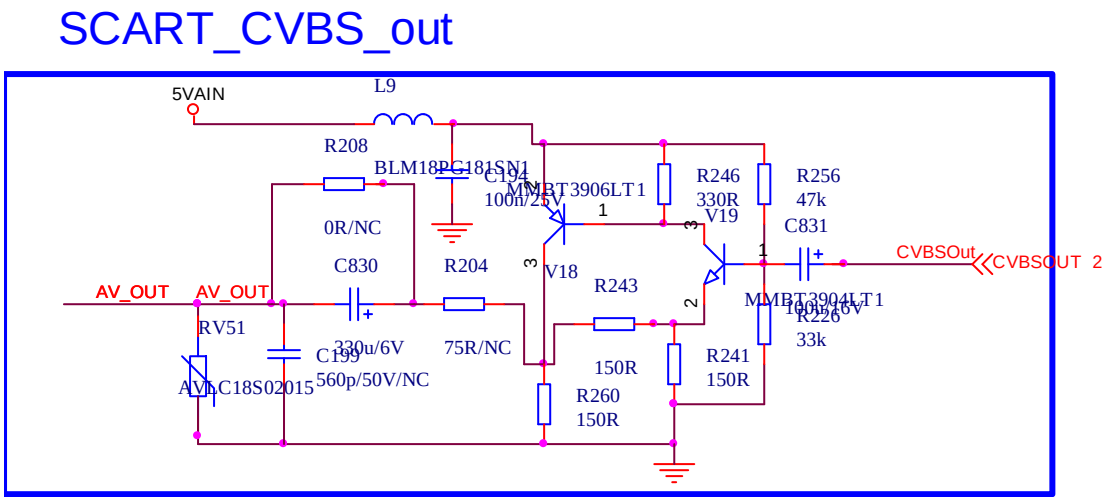
c) VGA Signal

PC（VGA）signal input from XS24 , later enter U46 .



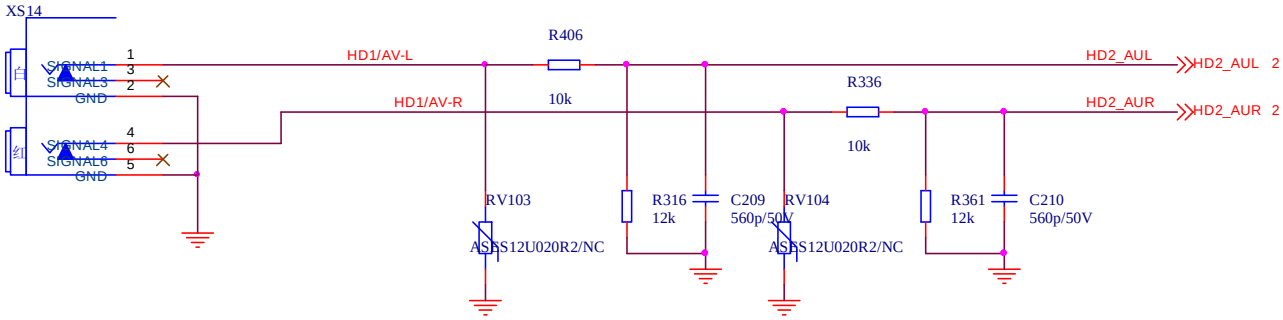
d) The HDMI and USB signals directly input U46.

e) SCART CVBS output from U46 pass through the following amplified circuit .output from XS7



f) Audio Signal (except HDMI and USB)

VGA audio input through XS6, AV and YPbPr Audio input share the same terminal XS14



Audio output

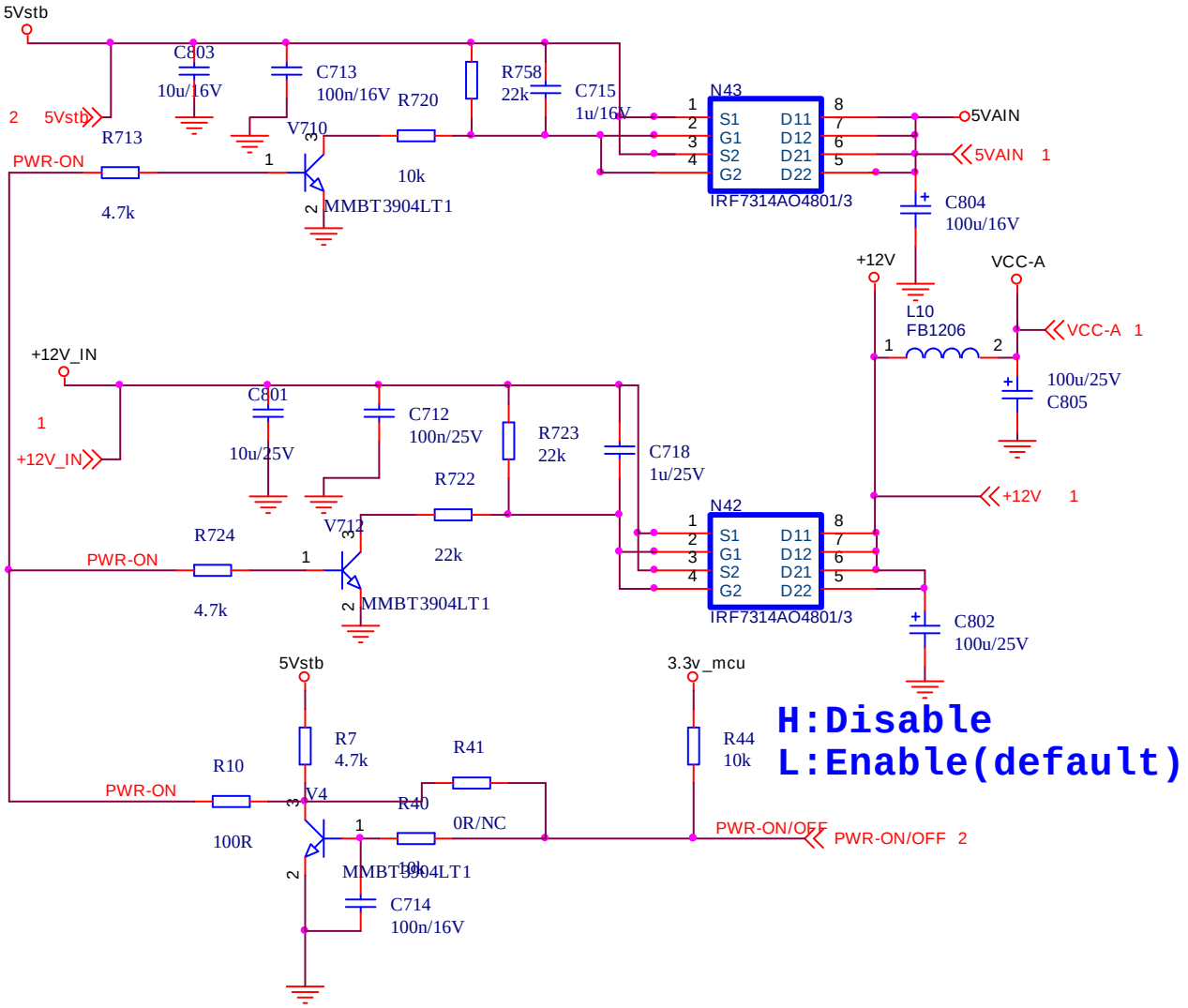
After audio signal was processed by the main IC, outputting digital audio signal that enter I2S and TAS5707 to amplify processing ,finally output to Speakers or soundbars

.

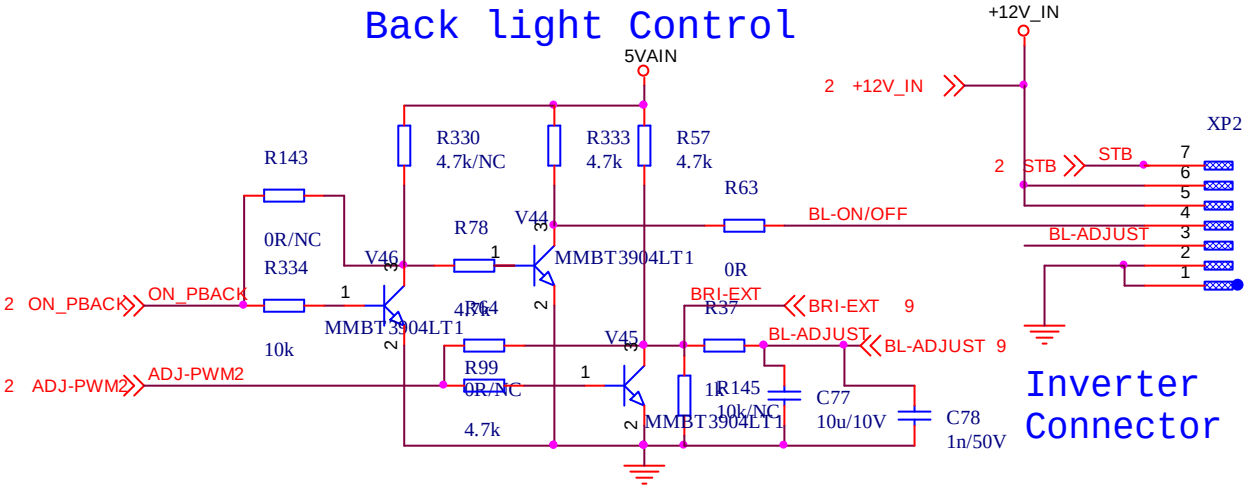
g) Control Process：

The Power only has 12V(+12V_IN) output ， other voltages are converted from 12V(+12V_IN). N43 and N42 can interrupt other voltages while standby, only reserve standby 5V(5Vstb) and standby 12V(+12V_IN). as following. When TV Power on , PWR-ON/OFF Signal is Low level, 5VAIN Power supply normally ; otherwise when TV standby , N43 is shut off , 5VAIN Power _supply is low.

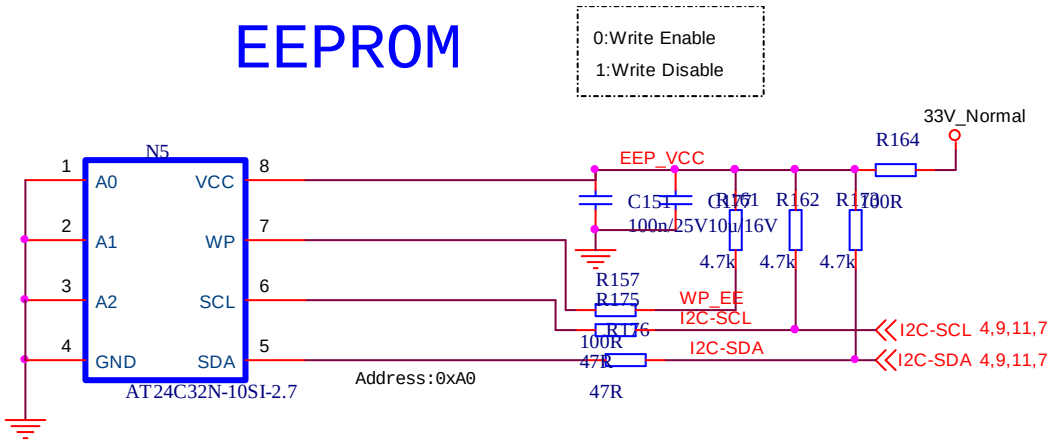
+12V standby signal control as similar as 5VAIN



Power on, the Panel _Backlight and Brightness are control by the main board . the PIN 4 of XP2 is BL_ON/OFF, the high or low level control the BL_ON/OFF; the PIN 3 of XP2 is BL_ brightness Adjust, through control the level high or low to control the BL_ brightness.



I2C master. for example :search channels , save the customer setting.and the operation of IR and Keypad. Also can receive information from the EEPROM (N5 AT24C32N)

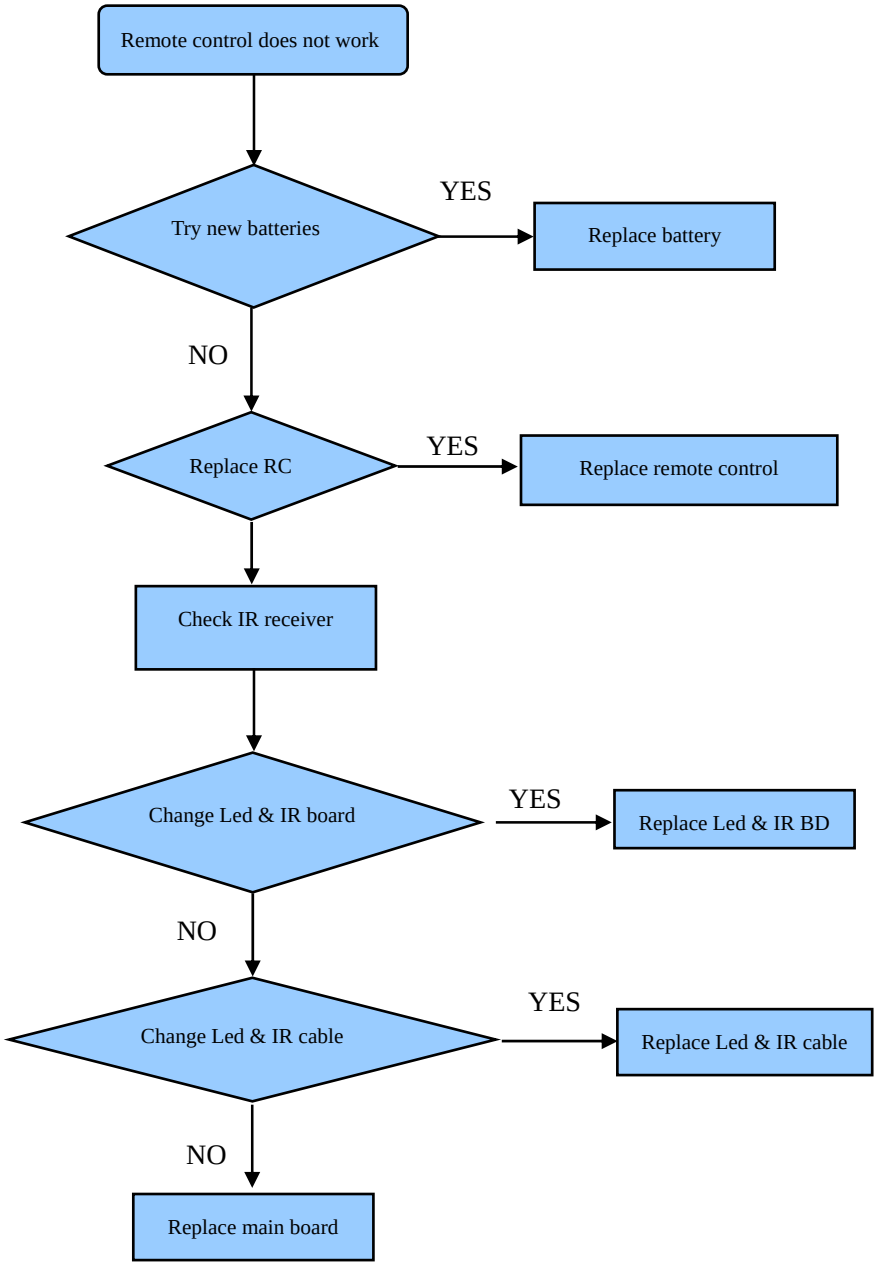


h) The main control signal, as list:

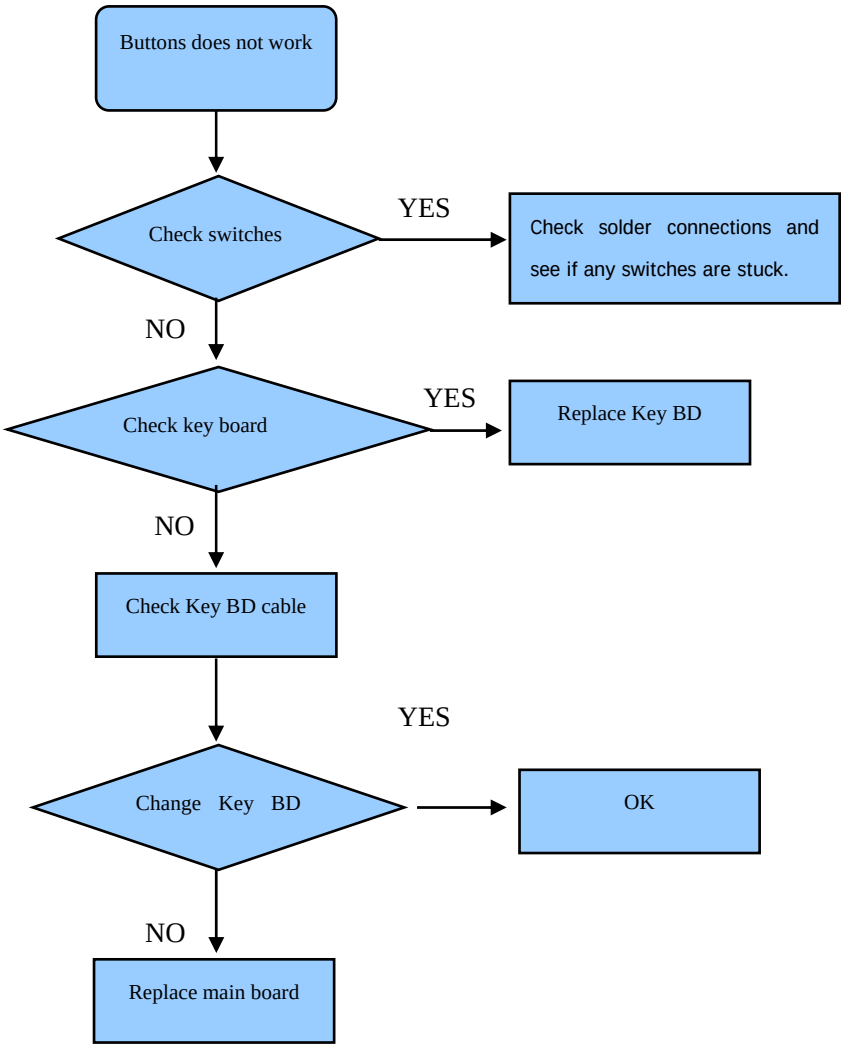
Control Signal	net name	recommend	Remark
Standby signal（Power control）	PWR-ON/OFF	Low level power on	PWR-ON/OFF pass V4、inverse phase
	PWR-ON	High level power on	
BL-control	ON_PBACK	High level power on	
	BL-ON/OFF	Low level power on	
Audio amplify mute	MUTE_5707	Low level mute	
Backlight contral	ADJ-PWM2		Contral brightness of backlight
Key “0”	KEYPAD-KEY0		Key
Key “1”	KEYPAD-KEY1		Key
Remote control signal	IR_IN		IR

5.3 Troubleshooting

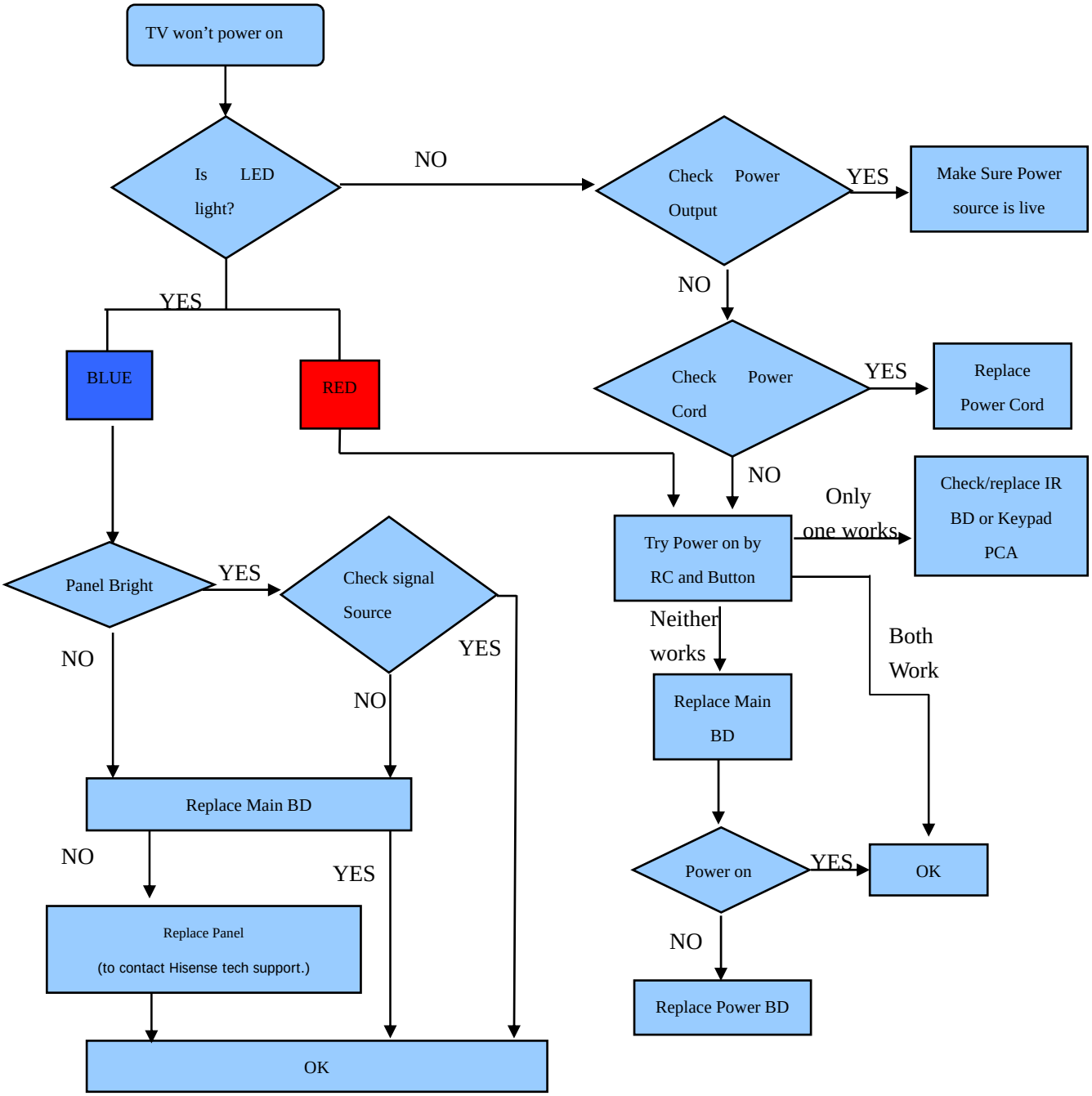
5.3.1 Troubleshooting for Remote Control



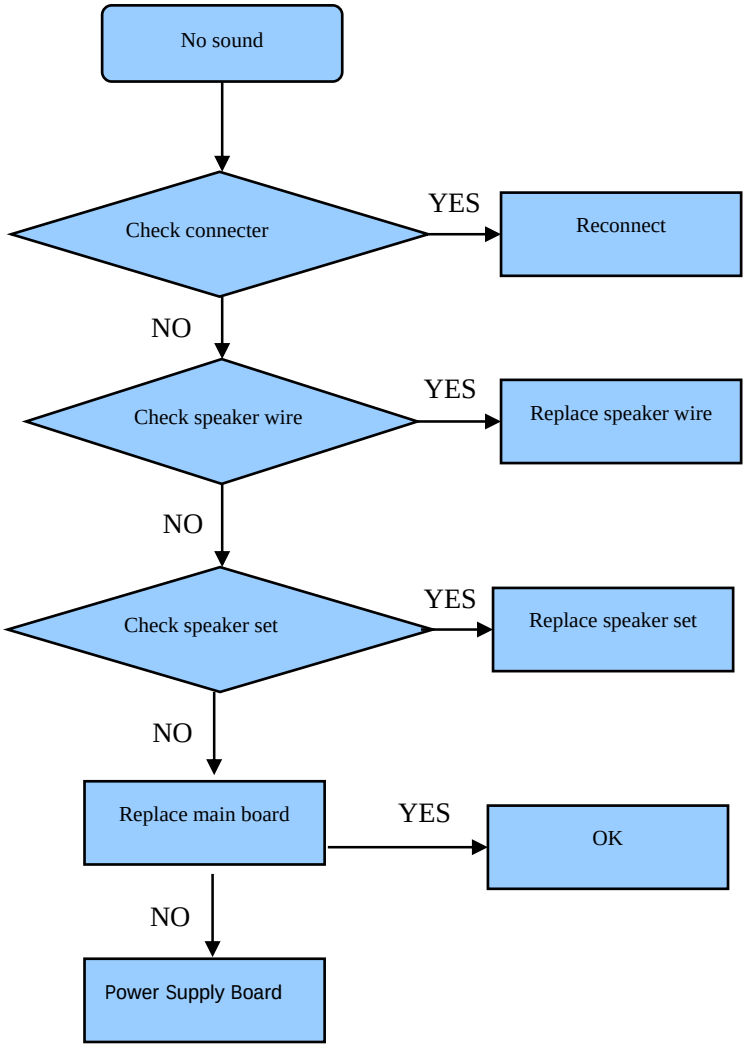
5.3.2 Troubleshooting for Function Key



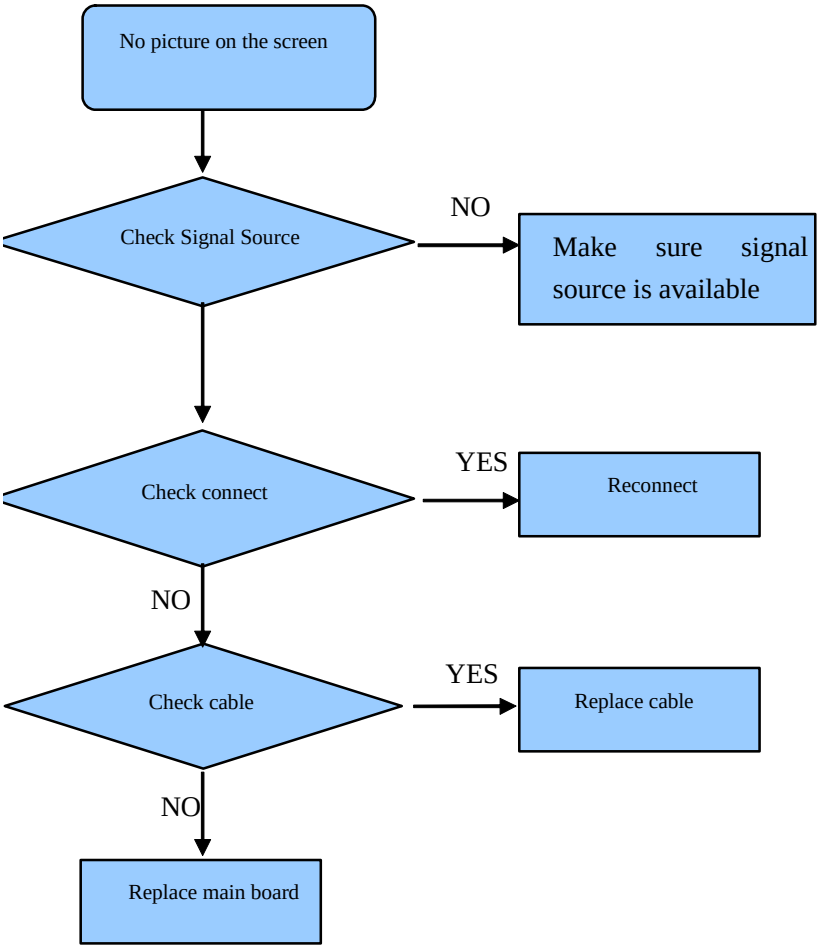
5.3.3 TV won’t Power On



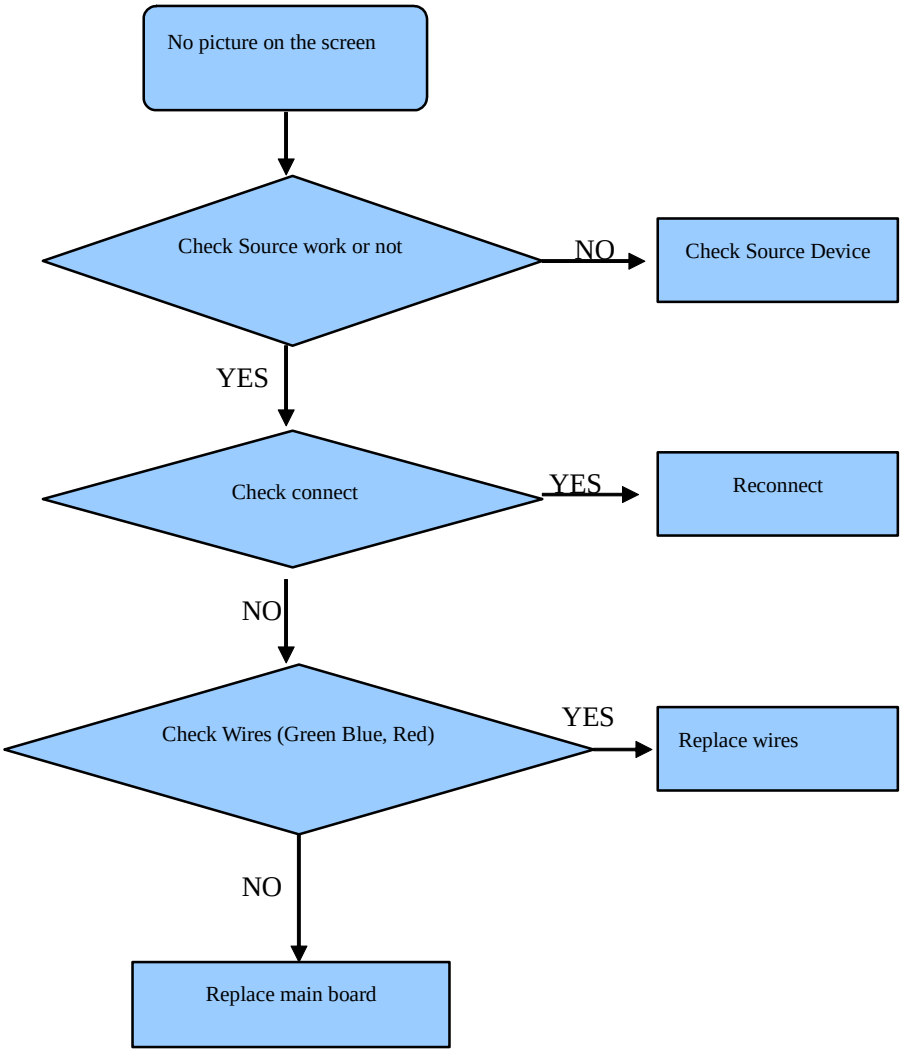
5.3.4 Troubleshooting for Audio



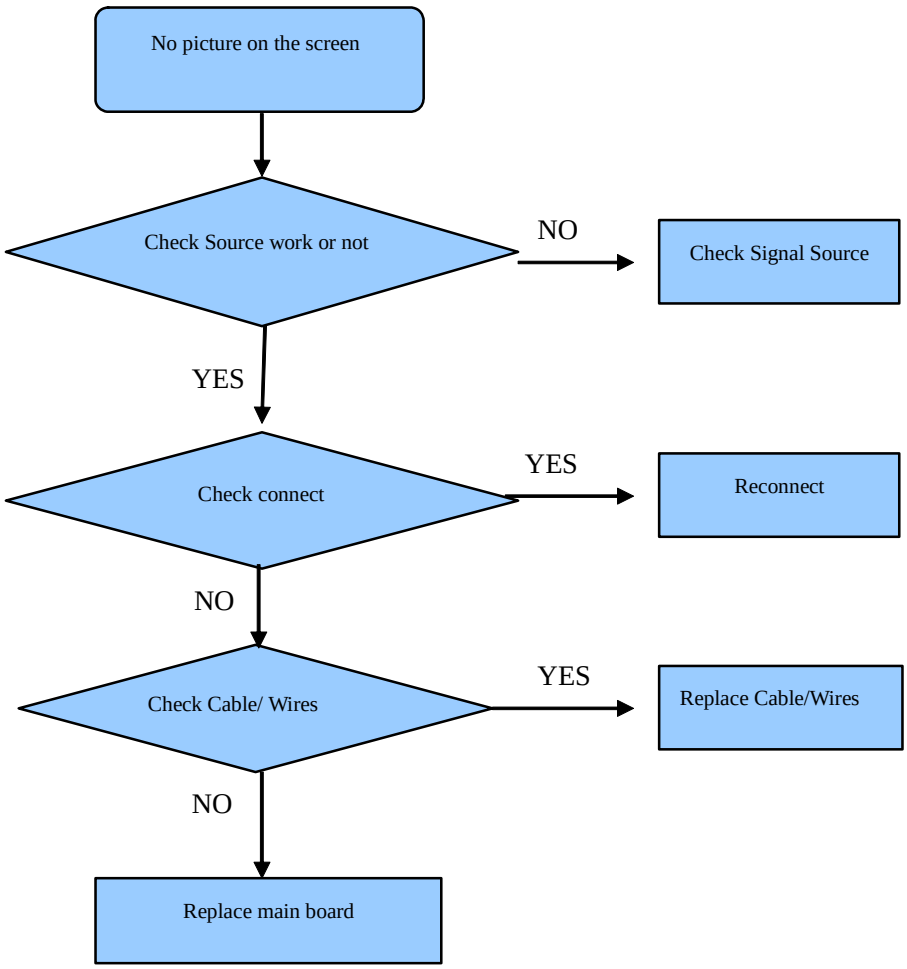
5.3.5 Troubleshooting for TV/VGA/HDMI input



5.3.6 Troubleshooting for YPbPr input

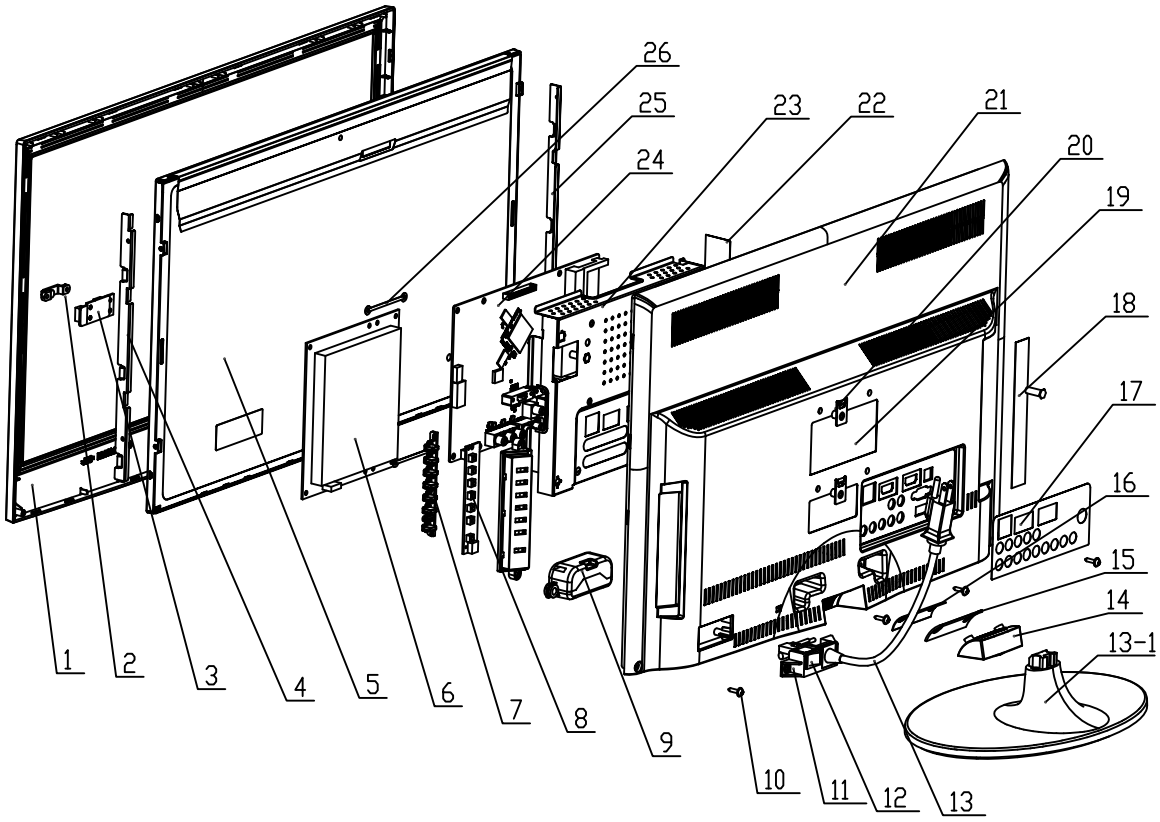


5.3.7 Troubleshooting for Video input



6. Explode View

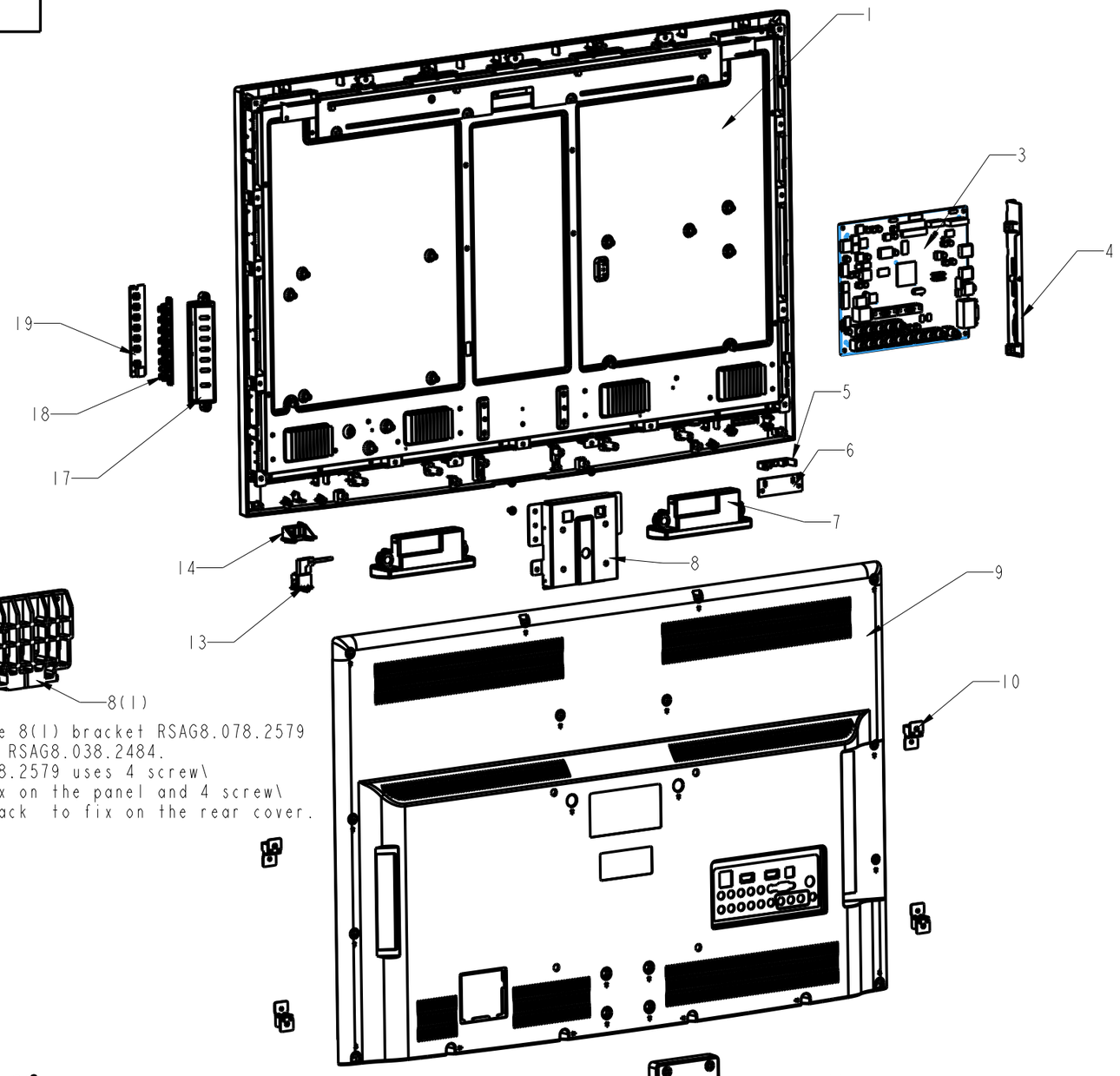
7. Schematic circuit diagram



LTDN24K15CEU
Explode view

LTDN24K15CEU				
No.	**Description**	**Qty.**	**Code Number**	**Remark**
1	Front bezel	1	RSAG8.074.896\FB2\V0\ROH\X0	
2	Led Lens	1	RSAG8.640.0213\ROH	
3	IR Board	1	RSAG2.908.4193-03\ROH	
4	Bracket	1	RSAG8.038.2452\ROH	
5	LCD Panel	1	M236H3-LA2\V236H1-LE2\GS\JK\ROH	
6	Power Board	1	RSAG2.908.2256-52\ROH	
7	Bracket	1	RSAG8.078.937\ROH\X0	
8	Keypad PCA (wit	1	RSAG2.908.1962\ROH	
9	Bracket	1	RSAG8.078.938\ROH\X1	
10	Screw	4	SJ2825-87 ST3X12C黑色\ROH\STD	
11	Bracket	1	RSAG8.078.932\ROH\X0	
12	Power Switch	1	HF-606(TV)-P通PS8-12-D-047B\ROH	
13	Power Cord	1	YS-3-8E-2\ROH	
(13-1)	STAND	1	RSAG6.121.0224\FB2\ROH\X1\SKD	
14	Bracket	1	RSAG8.078.946\ROH\X0	
15	Bracket	1	RSAG8.600.171\ROH\X0	
16	Bracket	1	RSAG8.038.2486\ROH	
17	Bottom Label	1	RSAG8.804.4251\ROH	
18	Side Label	1	RSAG8.804.4250\ROH	
19	Rating Label	1	See the TV Rear Back.Difference because of Brands	
20	Bracket Unit	2	RSAG6.150.804\ROH	
21	Rear Cover	1	RSAG8.074.1095\B2\V0\ROH\X0	
22	Label	1	RSAG8.804.4247\ROH	
23	Bracket Unit	1	RSAG6.150.1052\ROH	
24	Main Board	1	RSAG2.908.4258-01\ROH	

25	Bracket	1	RSAG8.038.2453\ROH	
26	Bracket	2	RSAG8.038.2485\ROH	



Note:
Next version will use 8(1) bracket RSAG8.078.2579
instead of 8 bracket RSAG8.038.2484.
8(1) bracket SAG8.078.2579 uses 4 screw\
SJ2836-87 M4X8 to fix on the panel and 4 screw\
SJ2824-87 ST5X14F black to fix on the rear cover.

Note:
Next version will use
11(1) panel\RSAG8.043.0122
instead of 11 stand\RSAG6.121.115.
11(1) panel\RSAG8.043.0122 uses
3 screw\SJ2823-87 ST4X16C to fix to the TV.

序号	名 称	数量	代 号	备 注
5				
4				
3				
2				
1				

更改标记	数量	更改单号	签名	日期

设 计	
审 核	
工 艺	
标准化	
批 准	

explode view

LHDN32K15CEU

阶段标记	质 量	比 例
		1:6

第 页	共 页

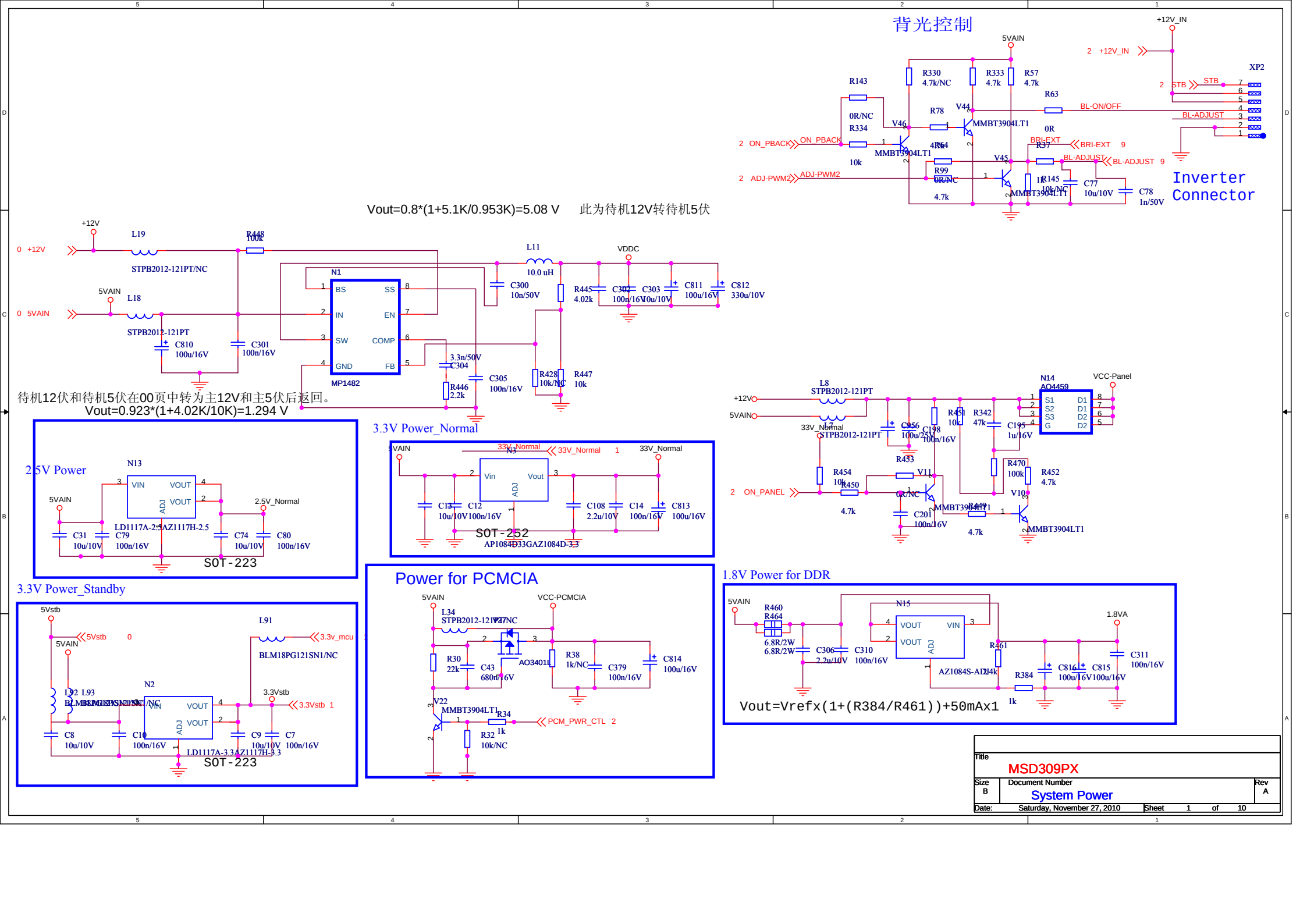
青岛海信电器股份有限公司

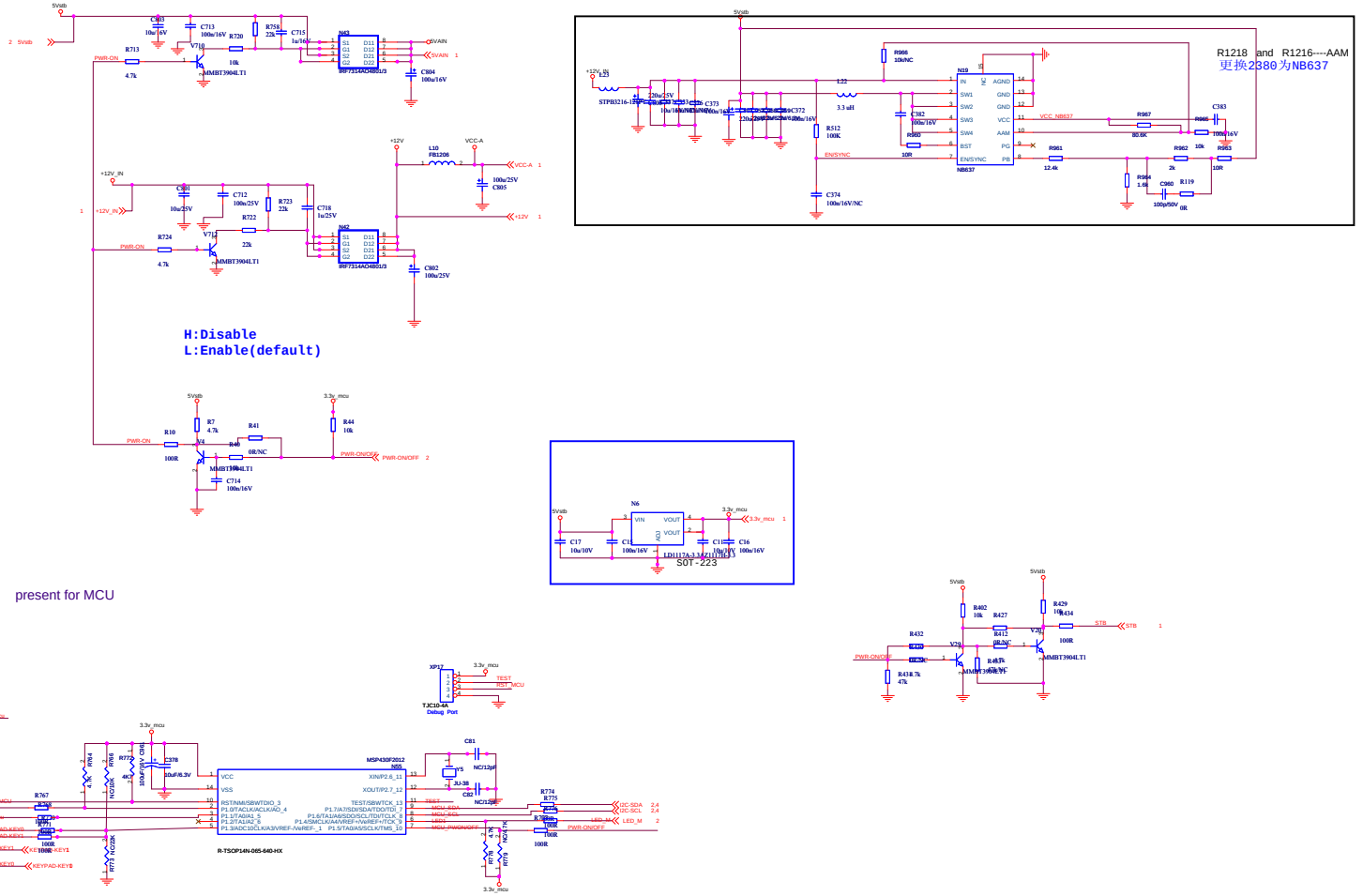
旧底图总号
底图总号
签 名

格式1 幅面: A3

LHDN32K15CEU Parts List					
No.	Code Number	Description	QTY	Note	
1	HE315DH-E02	LED panel	1	Front bezel is fixed with panel.	
2					
3	RSAG2.908.4258	main board	1	fix with 3 screw\SJ2836-87 M3X8 white and 1 screw\SJ2831-87 ST3X8.	
4	RSAG8.081.1039	Terminal Bracket	1		
5	RSAG8.640.0203	lens	1		
6	RSAG2.908.2310-52	IR Board	1	fix with 2 screw\SJ2825-87 ST3X10C black.	
7	VIT3010-8W8Ω-01	Speaker	2	fix with 4 screw\RSAG8.912.018.	
8	RSAG8.038.2484	bracket	1	fix to panel with 2 screw\GB/T818-2000 M4X6 white and 2 screw\SJ2836-87 M4X6, fix to front bezel with 2 screw\SJ2824-87 ST4X14F black.	
9	RSAG8.074.917	Rear Cover	1	fix to front bezel with 14 screw\SJ2824-87 ST4X14F black.	
10	RSAG6.150.685	bracket	4	fix with 4 screw\SJ2824-87 ST4X10F black.	
11	RSAG6.121.115	stand	1	fix with 4 screw\SJ2824-87 ST5X14F black.	
12	RSAG8.078.2589	bracket	1	fix with 2 screw\SJ2830-87 M3X6 black.	

13	HF-606(TV)-P通PS8-12-D-047B	Power Switch	1		
14	RSAG8.078.820	bracket	1	fix to front bezel with screw\SJ2822-87 ST3X10C black.	
15					
16					
17	RSAG8.078.938	bracket	1	fix with 2 screw\SJ2836-87 M3X8 white.	
18	RSAG8.078.937	bracket	1		
19	RSAG2.908.1962	Keypad PCA	1		
8（1）	RSAG8.078.2579\ROH	bracket	1	fix to panel with 4 screw\SJ2836-87 M4X8 white,fix to Rear Cover with 4 screw\SJ2824-87 ST5X14F black. (next version uses Bracket 8(1))	1102433
11（1）	RSAG8.043.0122\SKD\ROH	stand	1	fix to TV with 3 screw\SJ2824-87 ST4X16C black. (next version uses Stand 11(1))	152661


背光控制
+12V_IN
5VAIN
2 +12V_IN
XP2
2 STB
STB
R143
R330
4.7k/NC
R333
4.7k
R57
4.7k
R63
BL-ON/OFF
BL-ADJUST
R78
V44
MMBT3904LT1
0R/NC
R334
V46
2 ON_PBACK
ON_PBACK
10k
R64
4.7k
0R
BRI-EXT
BRI-EXT 9
R37
V45
BL-ADJUST
BL-ADJUST 9
R99
0R/NC
2 ADJ-PWM2
ADJ-PWM2
1k
R145
10k/NC
C77
10u/10V
C78
1n/50V
Inverter
Connector
Vout=0.8*(1+5.1K/0.953K)=5.08 V
此为待机12V转待机5伏
+12V
0 +12V
L19
R448
100k
STPB2012-121PT/NC
5VAIN
0 5VAIN
L18
STPB2012-121PT
C810
100u/16V
C301
100n/16V
N1
BS
IN
SW
GND
SS
EN
COMP
FB
MP1482
L11
10.0 uH
VDDC
C300
10n/50V
R445
4.02k
C302
100n/16V
C303
10u/10V
C811
100u/16V
C812
330u/10V
3.3n/50V
C304
C305
100n/16V
R446
2.2k
R428
10k/NC
R447
10k
待机12伏和待机5伏在00页中转为主12V和主5伏后返回。
Vout=0.923*(1+4.02K/10K)=1.294 V
L8
STPB2012-121PT
+12V
5VAIN
33V_Normal
STPB2012-121PT
C956
100u/25V
C198
100n/16V
R451
10k
R342
47k
C195
1u/16V
N14
AO4459
VCC-Panel
S1
S2
S3
G
D1
D2
R453
R454
10k
R450
4.7k
V11
G/NC
2 ON_PANEL
C201
100n/16V
R449
4.7k
R470
100k
R452
4.7k
V10
MMBT3904LT1
2.5V Power
N13
VIN
VOUT
ADJ
5VAIN
2.5V_Normal
C31
10u/10V
C79
100n/16V
LD1117A-2.5/AZ1117H-2.5
C74
10u/10V
C80
100n/16V
SOT-223
3.3V Power_Normal
5VAIN
33V_Normal
N3
Vin
Vout
ADJ
C13
10u/10V
C12
100n/16V
C108
2.2u/10V
C14
100n/16V
C813
100u/16V
SOT-252
AP1084D33GAZ1084D-3.3
3.3V Power_Standby
5Vstb
L91
3.3v_mcu
BLM18PG121SN1/NC
N2
3.3Vstb
C8
10u/10V
C10
100n/16V
C9
10u/10V
C7
100n/16V
LD1117A-3.3/AZ1117H-3.3
SOT-223
Power for PCMCIA
5VAIN
VCC-PCMCIA
L34
STPB2012-121PT/NC
R30
22k
C43
680n/16V
AO3401L
R38
1k/NC
C379
100n/16V
C814
100u/16V
V22
MMBT3904LT1
R34
1k
PCM_PWR_CTL 2
R32
10k/NC
1.8V Power for DDR
5VAIN
R460
R464
6.8R/2W
6.8R/2W
N15
VOUT
VIN
ADJ
AZ1084S-ADJ/4k
1.8VA
C306
2.2u/10V
C310
100n/16V
R461
1k
R384
1k
C816
100u/16V
C815
100u/16V
C311
100n/16V
Vout=Vrefx(1+(R384/R461))+50mAx1
Title
MSD309PX
Size
B
Document Number
System Power
Rev
A
Date:
Saturday, November 27, 2010
Sheet
1
of
10


5Vstb
+12V_IN
PWR-ON
5VAIN
VCC-A
+12V
3.3v_mcu
PWR-ON/OFF
H:Disable
L:Enable(default)
R1218 and R1216----AAM
更换2380为NB637
NB637
STPIB3216-1R5M
3.3 uH
R512 100K
C374 100u/16V/NC
R967 80.6K
R961 12.4k
R962 2k
R963 10R
C960 100p/50V
R119 0R
C383 1000u/16V
R966 10k/NC
R965 10R
C382 100u/16V
C373 100u/16V
C372 100u/16V
C371 100u/16V
C370 100u/16V
C369 100u/16V
C368 100u/16V
C367 100u/16V
C366 100u/16V
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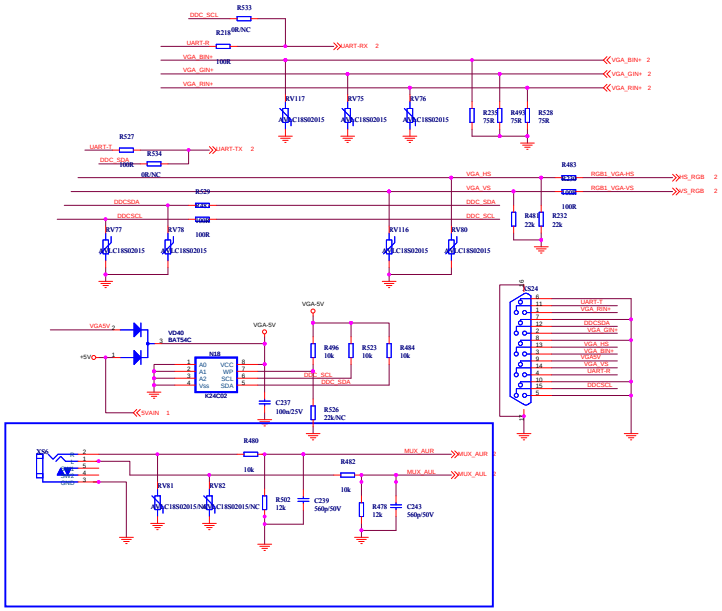
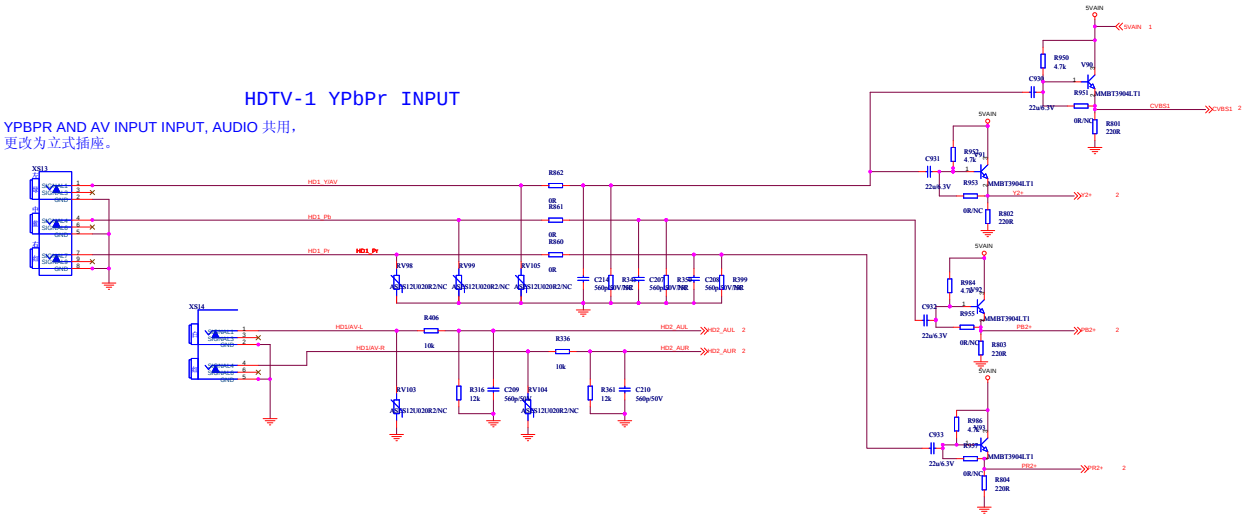
L22
L23
L10 FB1206
C803 10u/16V
C713 100u/16V
R758 22k
C715 1u/16V
R720 10k
V710 MMBT3904LT1
R713 4.7k
C804 100u/16V
C801 10u/25V
C712 100u/25V
R723 22k
C718 1u/25V
R722 22k
V711 MMBT3904LT1
R724 4.7k
C802 100u/25V
C805 100u/25V
R7 4.7k
R41
R44 10k
R10 100R
R40 0R/NC
V4 MMBT3904LT1
C714 100u/16V
N6
LD1117A3.3V/1A/SOT-223
C17 10u/10V
C18 100u/16V
C19 10u/10V
C16 100u/16V
present for MCU
R538 NC/0R
R537 4.7K
IR_mcu
Q58 2N7002
R539 NC/10K
IR_IN
R767
R768
R769
R770
R771
R772
R773
R774
R775
R776
R777
R778
R779
R780
R781
R782
R783
R784
R785
R786
R787
R788
R789
R790
R791
R792
R793
R794
R795
R796
R797
R798
R799
R800
R801
R802
R803
R804
R805
R806

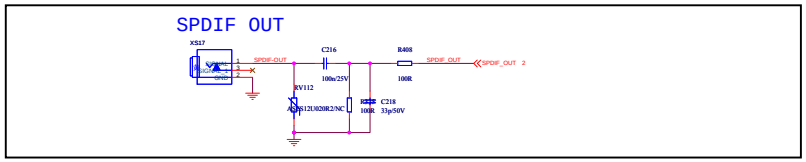

R533
DDC_SCL
R210 0R/NC
UART-R
UART-RX 2
VGA_BIN+
100R
VGA_GIN+
VGA_RIN+
VGA_BIN+ 2
VGA_GIN+ 2
VGA_RIN+ 2
RV117
RV75
RV76
AZ1C18SI02015
R235 75R
R495 75R
R528 75R
R527
UART-T
R534
UART-TX 2
DDC_SCL
100R
0R/NC
R483
VGA_HS
VGA_VS
RGB1_VGA-HS
RGB1_VGA-VS
VS_RGB 2
R529
DDCSDA
DDCSCL
DDC_SDA
DDC_SCL
R481 22k
R2312 22k
100R
RV77
RV78
RV116
RV80
VGASV 2
VD40 BAT54C
VGA-5V
+5V 1
J618
A0 VCC
A1 WP
A2 SCL
Vss SDA
R496 10k
R523 10k
R484 10k
DDC_SCL
DDC_SDA
K24C02
C237 100u/25V
R526 22k/NC
5VAIN 1
XS24
UART-T
VGA_RIN+
DDCSDA
VGA_GIN+
VGA_HS
VGA_BIN+
VGASV
VGA_VS
UART-R
DDCSCL
XS6
R480
10k
MUX_AUR
MUX_AUL
R482
10k
RV81
RV82
AZ1C18SI02015/NC
R502 12k
C239 560p/50V
R478 12k
C243 560p/50V

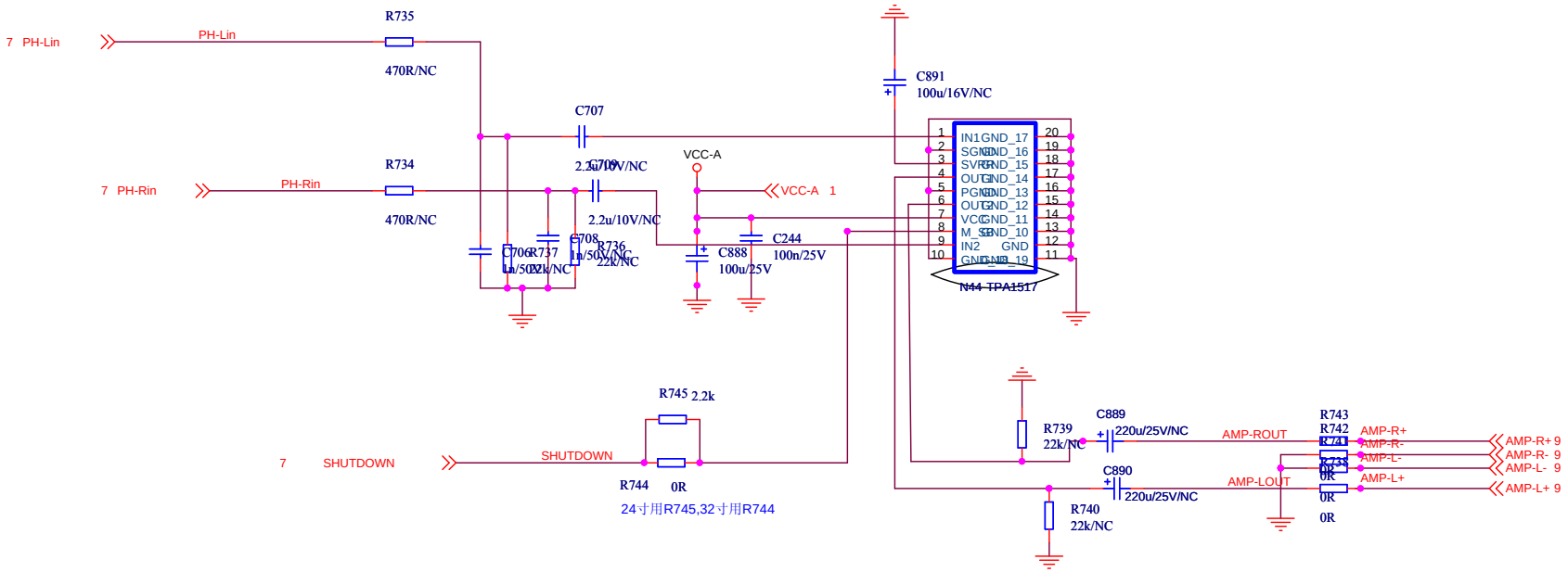
VER.C版本的更改

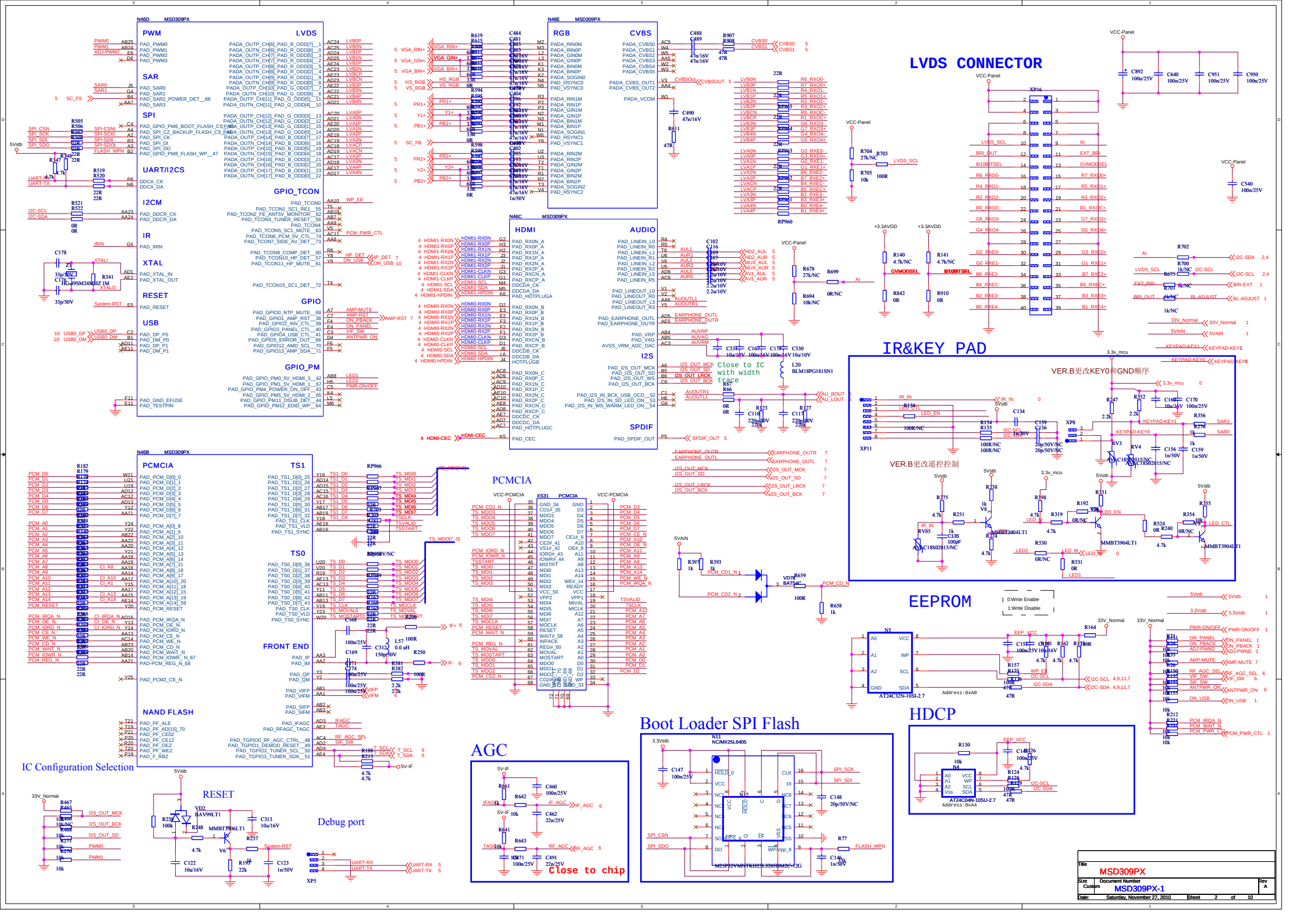
HDTV-1 YPbPr INPUT

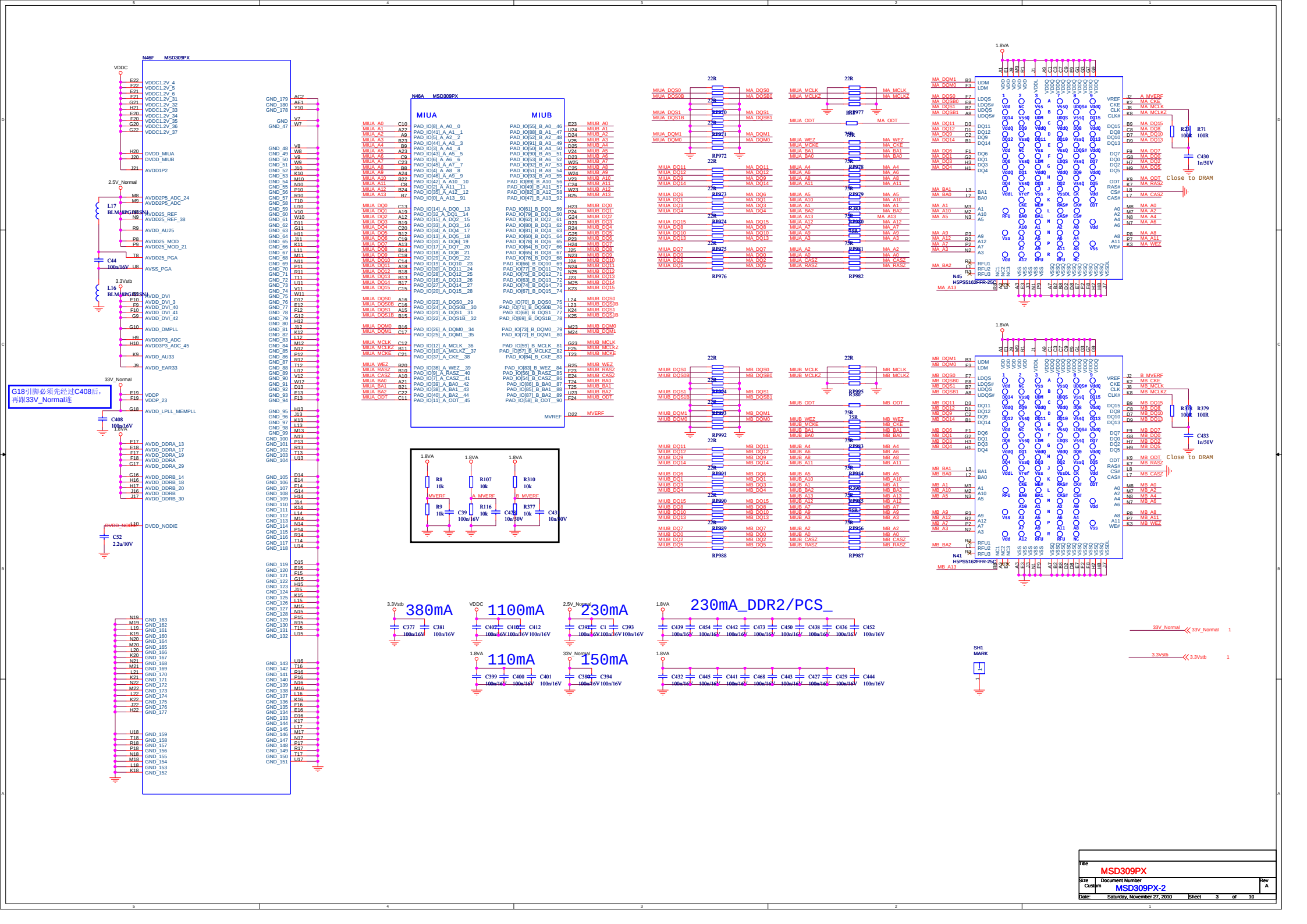
YPBPR AND AV INPUT INPUT, AUDIO 共用，
更改为立式插座。



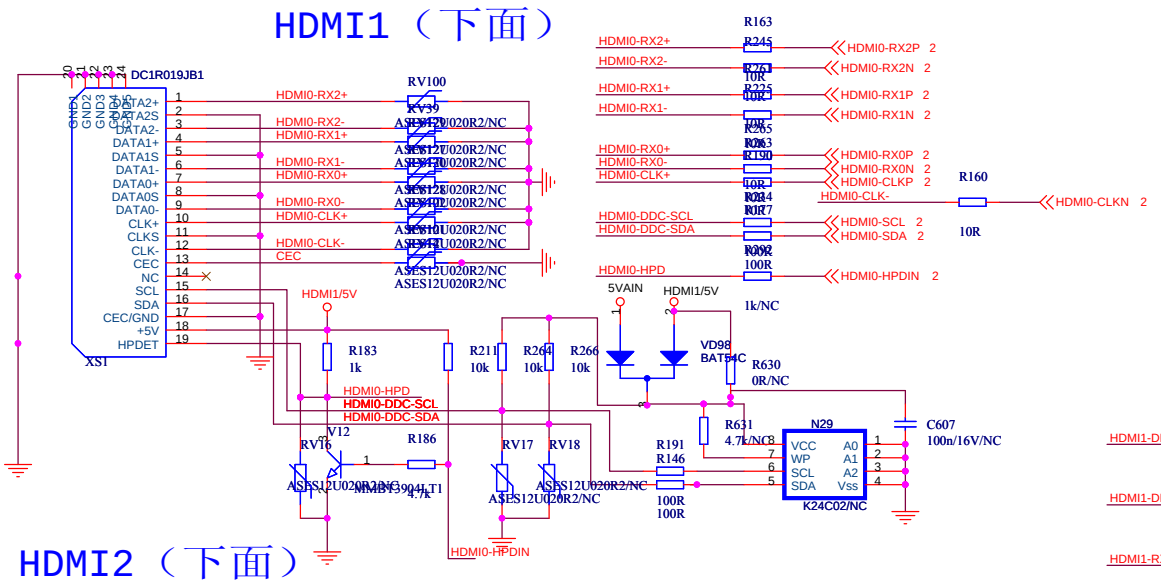



7 PH-Lin
PH-Lin
R735
470R/NC
7 PH-Rin
PH-Rin
R734
470R/NC
C707
2.2u/10V/NC
C706
1u/50V/NC
R737
22k/NC
C708
1u/50V/NC
R736
22k/NC
2.2u/10V/NC
VCC-A
VCC-A 1
C888
100u/25V
C244
100n/25V
C891
100u/16V/NC
IN1
SGND
SVREF
OUT1
PGND
OUT2
VCC
M_SEL
IN2
GND
GND_17
GND_16
GND_15
GND_14
GND_13
GND_12
GND_11
GND_10
N44 TPA1517
R745 2.2k
7 SHUTDOWN
SHUTDOWN
R744 0R
24寸用R745,32寸用R744
R739
22k/NC
C889
220u/25V/NC
AMP-ROUT
C890
220u/25V/NC
AMP-LOUT
R740
22k/NC
R743
R742
R741
R738
0R
0R
0R
0R
AMP-R+
AMP-R-
AMP-L-
AMP-L+
AMP-R+ 9
AMP-R- 9
AMP-L- 9
AMP-L+ 9

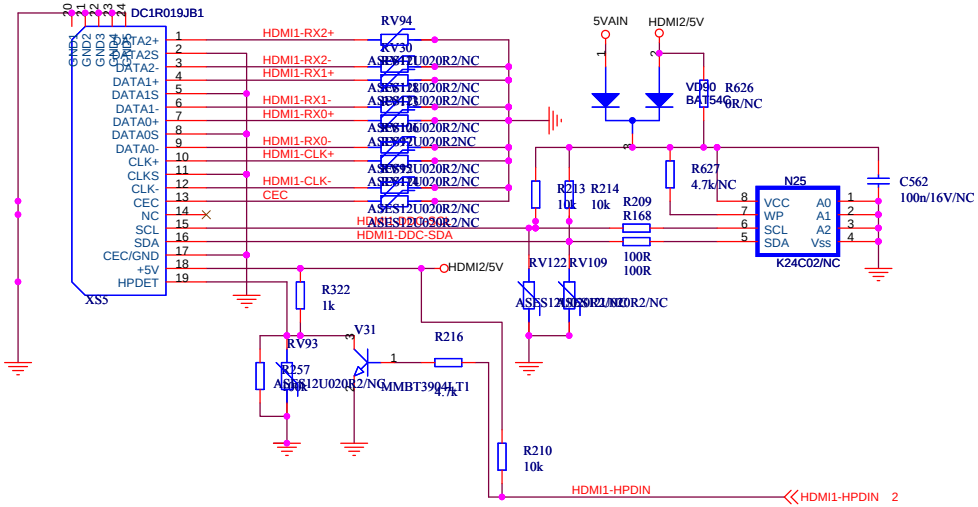

LVDS CONNECTOR
IR&KEY PAD
VER.B更改KEY0和GND顺序
VER.B更改遥控控制
EEPROM
HDCP
PCMCIA
AGC
Boot Loader SPI Flash
RESET
Debug port
IC Configuration Selection
Close to chip
Close to IC with width trace
MSD309PX
MSD309PX-1
Saturday, November 27, 2010

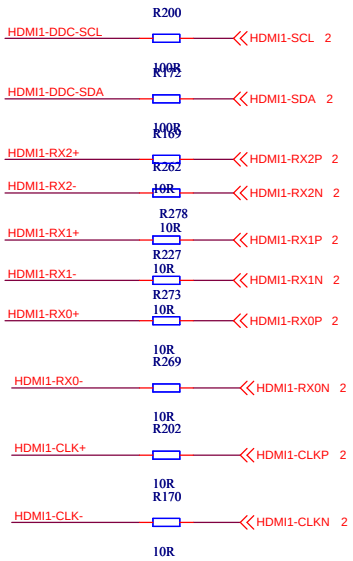

N46F MSD309PX
VDDC
2.5V_Normal
3.3Vstb
33V_Normal
1.8VA
G18引脚必须先经过C408后，再跟33V_Normal连
N46A MSD309PX
MIUA
MIUB
MVREF
380mA
1100mA
230mA
230mA_DDR2/PCS_
110mA
150mA
Close to DRAM
Close to DRAM
N45 H5PS5162FFR-25C
N41 H5PS5162FFR-25C
SH1 MARK
MSD309PX
MSD309PX-2
Saturday, November 27, 2010

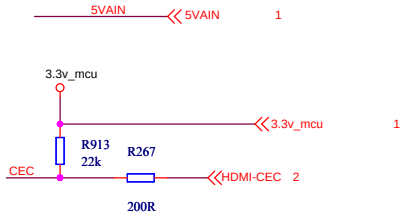
HDMI1（下面）



HDMI2（下面）







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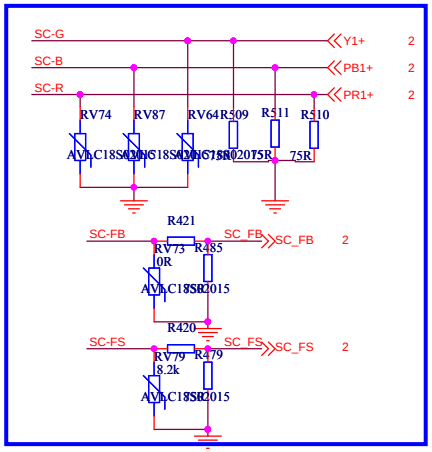
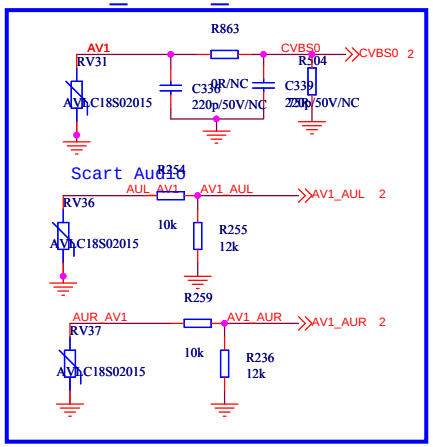
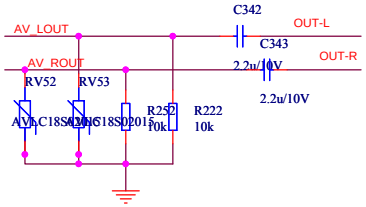
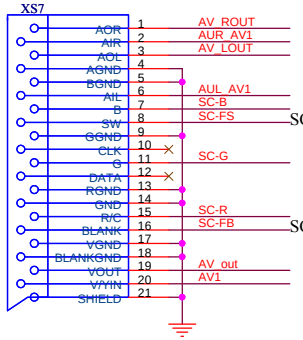
SCART_RGB



SCART_CVBS_in

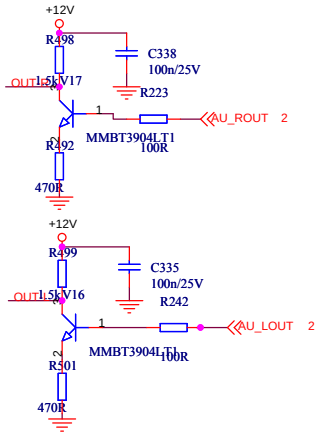




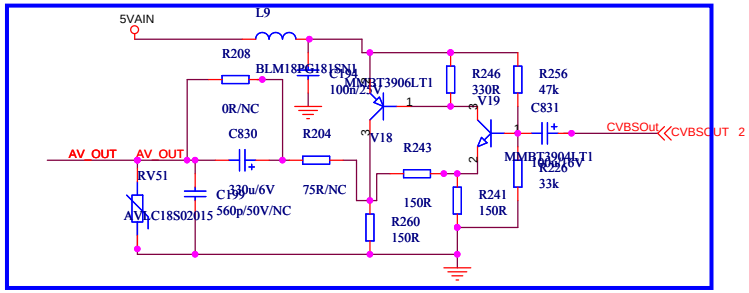


SCART_MODE

SCART_FB_SUB



SCART_CVBS_out



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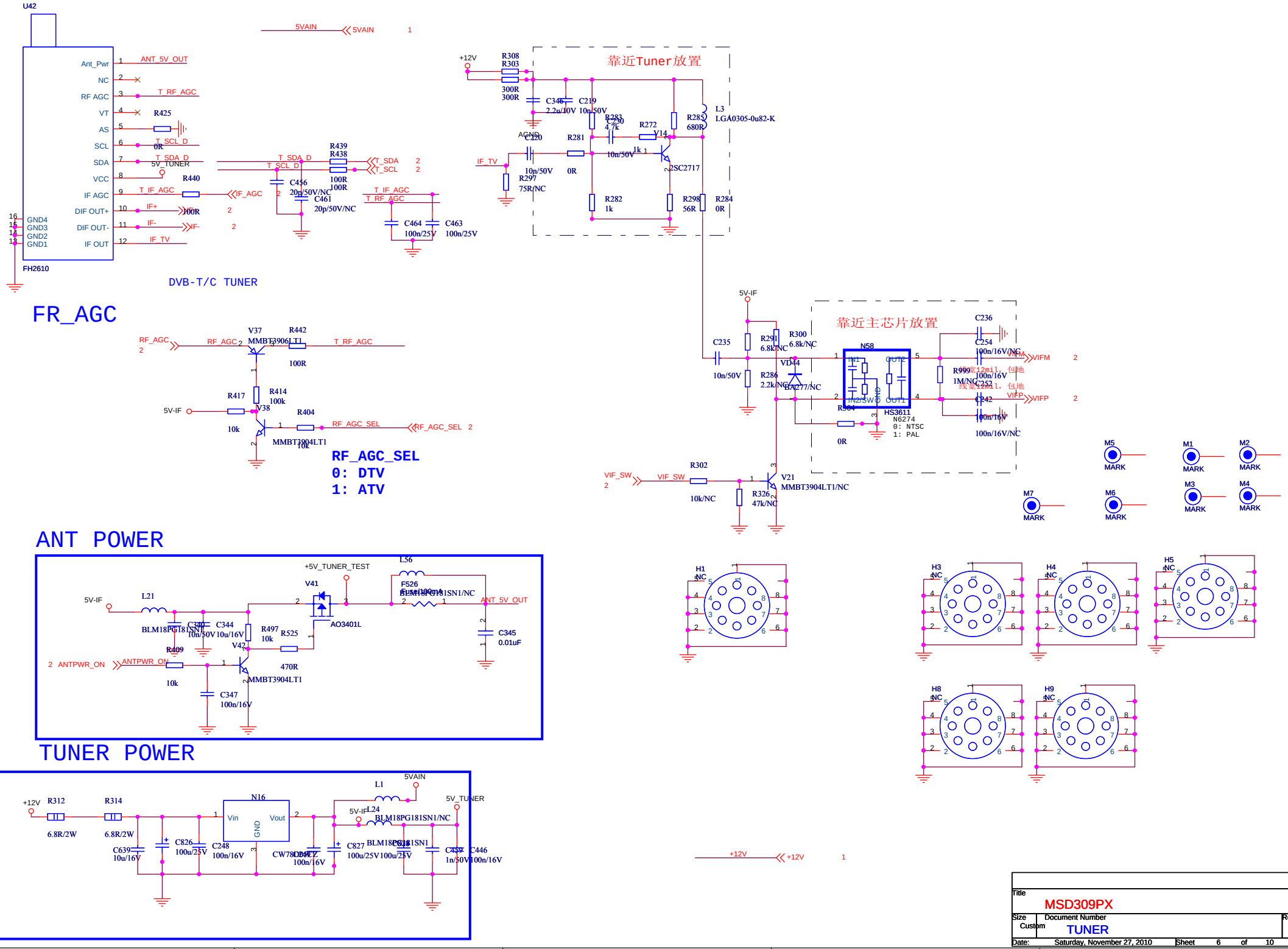
U42
Ant_Pwr
RF AGC
VT
AS
SCL
SDA
VCC
IF AGC
DIF OUT+
DIF OUT-
IF OUT
GND4
GND3
GND2
GND1
FH2610
ANT_5V_OUT
T_RF_AGC
R425
T_SCL_D
T_SDA_D
5V_TUNER
R440
T_IF_AGC
IF+
IF-
IF_TV
5VAIN
R439
R438
C456
20p/50V/NC
C461
20p/50V/NC
C464
100n/25V
C463
100n/25V
DVB-T/C TUNER
FR_AGC
RF_AGC
V37
MMBT3906LT1
R442
100R
R417
R414
100k
V38
10k
R404
RF_AGC_SEL
MMBT3904LT1
RF_AGC_SEL
0: DTV
1: ATV
ANT POWER
+5V_TUNER_TEST
L56
F526
Fuse(100mA)
BLM18PG181SN1/NC
V41
AO3401L
5V-IF
L21
BLM18PG181SN1/NC
C340
10n/50V
C344
10u/16V
R497
10k
R525
470R
R409
10k
V42
MMBT3904LT1
ANTPWR_ON
C347
100n/16V
ANT_5V_OUT
C345
0.01uF
TUNER POWER
+12V
R312
R314
6.8R/2W
6.8R/2W
N16
Vin
GND
Vout
C639
10u/16V
C826
100u/25V
C248
100n/16V
CW78D05CZ
C827
100u/25V
C446
100n/16V
L1
L24
BLM18PG181SN1/NC
5V_TUNER
靠近Tuner放置
R308
R303
300R
300R
C346
2.2u/10V
C219
10n/50V
C230
4.7k
R283
R272
V14
2SC2717
R285
680R
L3
LGA0305-0u82-K
C220
10n/50V
R281
1k
IF_TV
R297
75R/NC
R282
1k
R298
56R
R284
0R
靠近主芯片放置
5V-IF
C235
10n/50V
R291
6.8k/NC
R300
6.8k/NC
R286
2.2k/NC
VD44
BAV99/NC
N58
HS3611
N6274
0: NTSC
1: PAL
R564
0R
C236
C254
100n/16V/NC
R999
1M/NC
C252
100n/16V
C242
100n/16V
100n/16V/NC
VIFM
VIFP
线宽12mil，包地
VIF_SW
R302
10k/NC
V21
MMBT3904LT1/NC
R326
47k/NC
M1
M2
M3
M4
M5
M6
M7
MARK
H1
H3
H4
H5
H8
H9
NC
+12V
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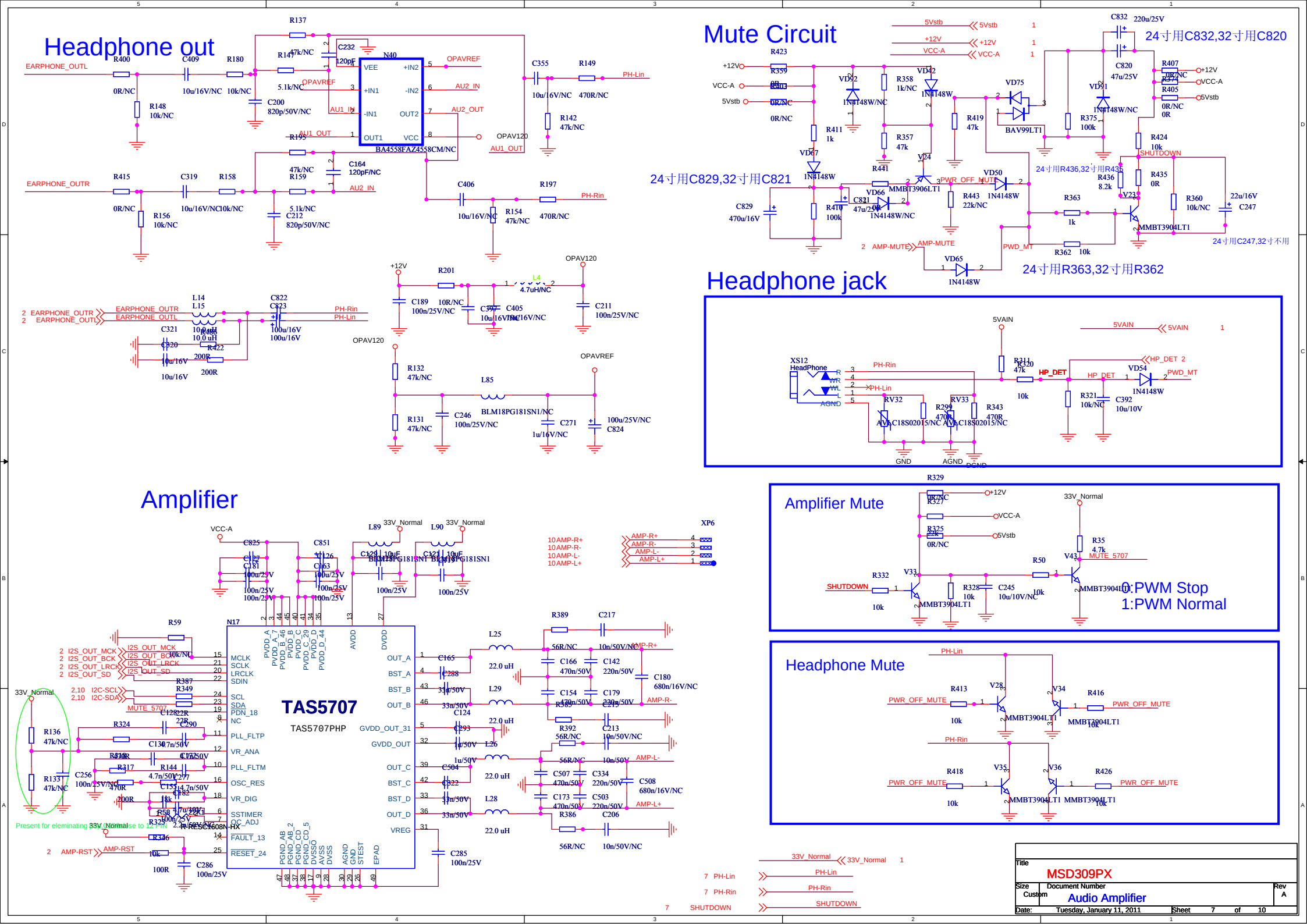
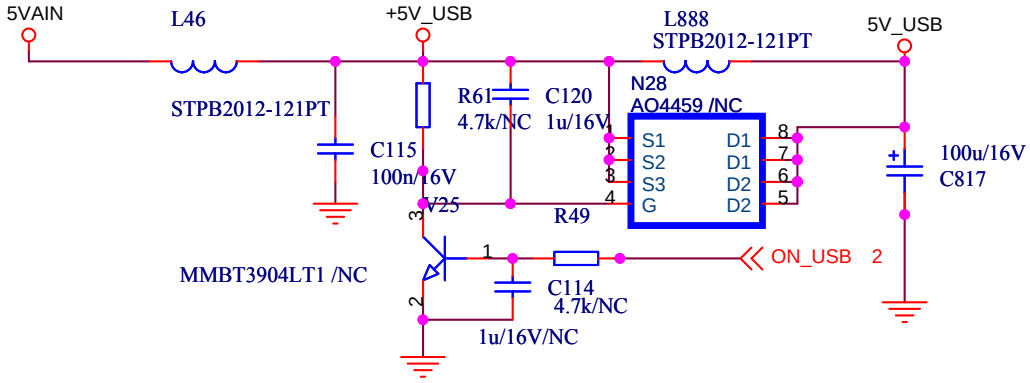
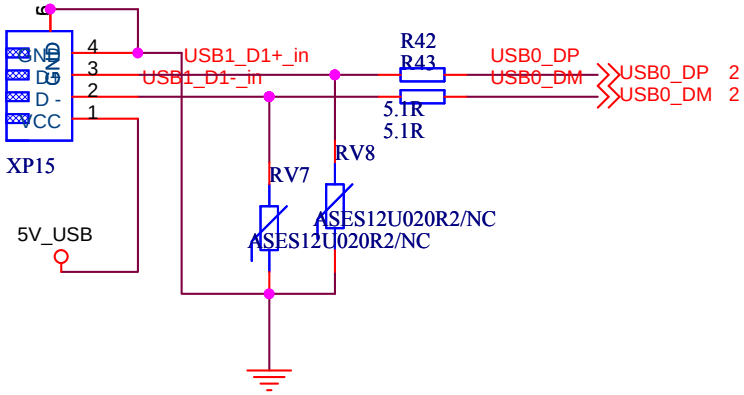

Headphone out
Mute Circuit
24寸用C832,32寸用C820
24寸用C829,32寸用C821
24寸用R436,32寸用R435
24寸用C247,32寸不用
24寸用R363,32寸用R362
Headphone jack
Amplifier
TAS5707
TAS5707PHP
Amplifier Mute
0:PWM Stop
1:PWM Normal
Headphone Mute
Present for eleminating 33V_Normal noise to 12PIN
MSD309PX
Audio Amplifier
Tuesday, January 11, 2011

5VAIN 5VAIN 1

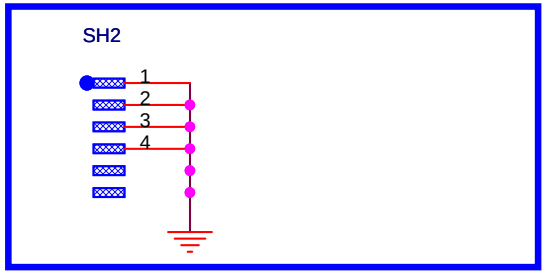
Power for USB



USB Input



Shield



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